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## REVISION OF THE GENERA OF PACHOLENINI, A NEOTROPICAL TRIBE OF HYLOBIINAE (COLEOPTERA, CURCULIONIDAE)

SERGIO A. VANIN<sup>1</sup>  
HANS REICHARDT

### ABSTRACT

*The study of the South American genera included by Blackwelder in Pissodinae (1947), showed that they are actually Hylobiinae, except for Tormeuphorus Faust, 1893, which had already been transferred to Cholinae by Kuschel (1955), and Dorytomorpha Hustache, 1929, a monotypic genus from Guadeloupe, of uncertain position.*

*The genera Pacholenus Schoenherr, 1826 (type-species, P. pelliceus Boheman, 1836), Pileophorus Schoenherr, 1843 (type-species, P. niticans Boheman, 1843), Antilophus Kuschel, 1952 (type-species, A. cristulatus Kuschel, 1952) and Lenopachus, gen. n. (type-species, L. tinga, sp. n.), are placed in the tribe Pacholenini, one of Lacordaire's groups of Hylobiinae, resurrected with a different definition than the original one. These four South American genera are revised, their relationships and distribution discussed. Relationships of the Pacholenini with the other Hylobiinae are obscure, especially because of the chaotic state of the taxonomy of the group, in spite of Marshall's (1932) and more recent attempts (e.g. Aslam, 1963) of reorganizing the structure of the subfamily. The following species (with their type-localities in parenthesis), are described as new: Pacholenus bifasciatus (Brazil, Mato Grosso: Rio Verde), P. canescens (Brazil, Goiás: Jataí), P. hispidus (Brazil, Paraná: Curitiba) and Lenopachus tinga (Brazil, Mato Grosso: Barra do Taipirapés).*

### INTRODUCTION

This paper started with a study of *Pileophorus* Schoenherr, 1843, a strange-looking genus which has usually been referred to Pissodinae (Dalla Torre, Schenckling & Marshall, 1932: 26; Blackwelder, 1947: 824). It soon became evident that: (1) the so called Neotropical Pissodinae represent a quite heterogeneous assemblage of genera, and

Museu de Zoologia, Universidade de São Paulo.

1. Bolsista, Fundação de Amparo à Pesquisa do Estado de São Paulo.

(2) that most genera do not bear any relationships to the Holarctic genus *Pissodes* Germar, 1817. For this reason we extended the study to the other genera listed in catalogs (Blackwelder, *l.c.*), and found out that:

*Tormeuphorus* Faust, 1893, a monotypic genus from Colombia, was transferred to Cholinae by Kuschel (1955: 272).

*Laccoproctus* Schoenherr, 1843, also monotypic from Mexico and Guatemala, is difficult to be correctly placed at present. Marshall (1932: 344) placed it among the Pissodinae, but according to his own key (*l.c.*: 346), seems to be better located among the Anchonini (Hylobiinae). There is no doubt, however, that *Laccoproctus* is not related to *Pissodes* nor to *Pileophorus* and the group of genera discussed below.

We have not examined *Dorytomorpha* Hustache, 1929, a monotypic genus from Guadeloupe. From its description and illustration, however, there is no doubt that Hustache's genus is not related to *Pileophorus* either; it could, perhaps, be a true Pissodinae (thus perhaps being the only Neotropical Pissodinae).

From this we conclude that there are no true representatives of Pissodinae among the South American (and perhaps even Neotropical) genera normally assigned to the subfamily (except perhaps *Dorytomorpha*, as discussed above), and that the genera *Pileophorus* and *Pacholenus*, usually included in it, do not fit into any of the tribes of Hylobiinae either.

Since we discovered a third, related genus (described below under the name *Lenopachus*), and discovered as well that the monotypic Chilean genus *Antilophus* Kuschel, 1952 (described in Hylobiinae), actually form a homogeneous group with *Pileophorus* and *Pacholenus*, we decided to define a group to include the four genera.

As Lacordaire (1863: 443) had already proposed the "Pacholénides" as one of the three subgroups of his tribe of the "Hylobiides", including *Pacholenus*, *Pileophorus* and *Paipalesomus* [for the latter and two other genera, which had already been recognized as forming a uniform group by Jekel (1872: 433), Marshall (1932: 346) proposed a tribe Paipalesomini], we propose here to resurrect the tribe Pacholenini to incorporate our four genera. With this action we only want to show that it represents a natural group, and provisionally rank it as a tribe. Its definitive position among the Hylobiinae, however, depends on future revisions at the generic and supra-generic levels. It is also possible that exotic genera unknown to us, belong here.

It is important to stress that we are only using Lacordaire's name for this tribe, but are not using his definition of it. Lacordaire's grouping of the Hylobiinae has been criticized a few times (*e.g.*, Jekel, 1872: 434-435; Marshall, 1932: 341-344). Lacordaire defined his "Pacholénides" (together with the "Sternéchides") as having "crochets des tarsi soudés". As will be seen below, *Pileophorus*, *Pacholenus* and *Lenopachus* have connate tarsal claws, but the Chilean *Antilophus*, closely related to *Pileophorus* and undoubtedly a member of this tribe, has free tarsal claws.

It has also to be stressed that we have only decided to treat our group as a tribe within the Hylobiinae because there was a name available in the literature, a name (and taxon) defined by an authority like Lacordaire, perhaps the last Coleopterist to have had a global view of weevils (and even Coleoptera).

Relationships of our Pacholenini to other tribes of Hylobiinae are very difficult to establish at present. The main reason is that the Hylobiinae are in great need of a complete revision. It is very clear that the relationships between the extant supra-generic groups are still unsettled, and in many instances the used concepts are not equivalent. This becomes very apparent in a recent attempt at a redefinition of the Hylobiinae (Aslam, 1963) based on the Indo-Pakistan genera. Groups which have been treated as tribes by Marshall and other authors (*e.g.* Paipalesomini and Anchonini), are raised to subfamily rank, equivalent to Hylobiinae; the same is suggested for a strictly Neotropical group, the Sternechini. It seems to us that raising every one of the perhaps hundreds of tribes of weevils to subfamily, without enough characters, and without a global view of the family (if such a view is possible at all!), changes taxonomic concepts to a point of making the whole system lose its practicability.

#### Material and methods

Specimens of Pacholenini are extremely rare in collections. In spite of great efforts to assemble as many specimens as possible, we could only get hold of a total of 35 specimens. These belong to the following collections:

- BMNH British Museum (Natural History), London (Mr. R. T. Thompson);
- COPC Charles O'Brien private collection, Tallahassee, Florida;
- DZUP Departamento de Zoologia, Universidade Federal do Paraná, Curitiba (Mr. R. C. Marinoni);
- EDNZ Department of Scientific and Industrial Research, Entomology Division, Auckland, New Zealand (Dr. G. Kuschel);
- HDEO Hope Department of Entomology, Oxford (Mr. E. Taylor);
- MNHN Museum National d'Histoire Naturelle, Paris (Mlle H. Perrin);
- MZSP Museu de Zoologia, Universidade de São Paulo, São Paulo;
- NRMS Naturhistoriska Riksmuseet, Stockholm (Dr. T. Nyholm).

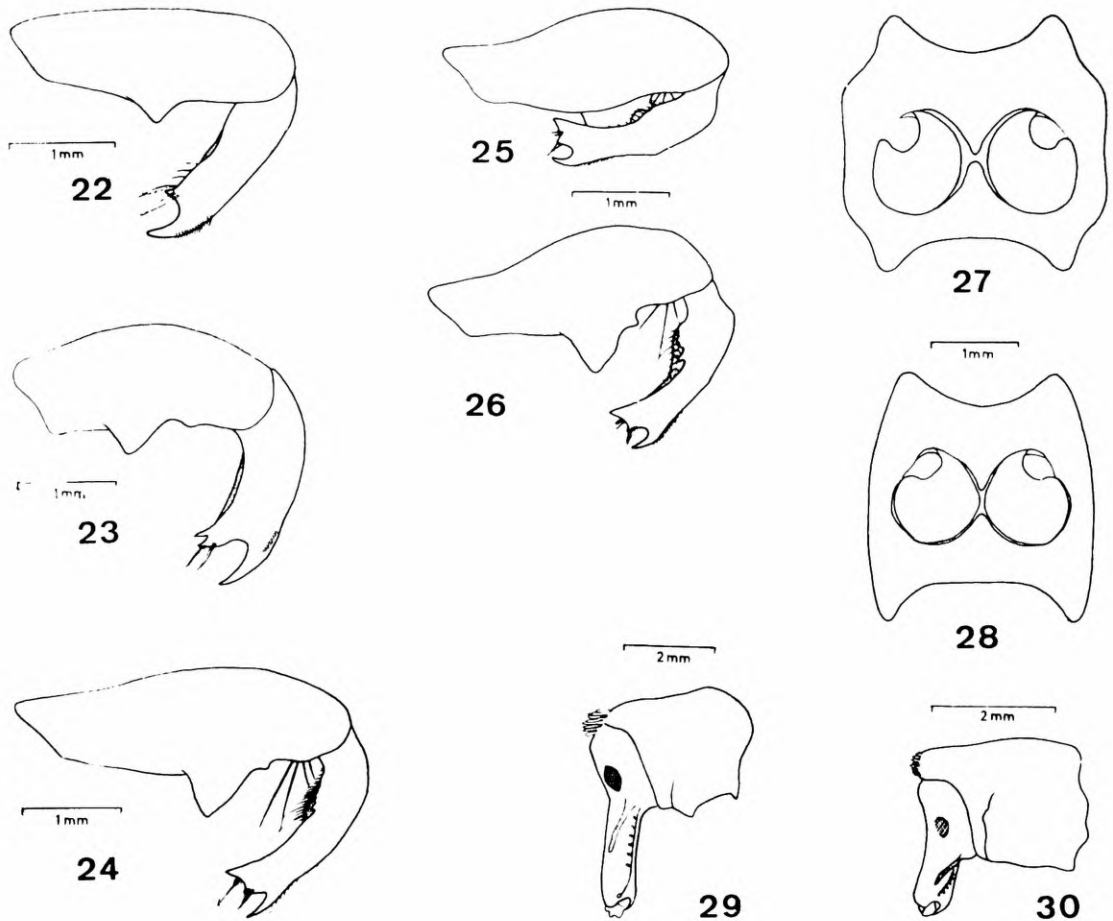
All types except that of *Antilophus cristulatus* (at present in EDNZ) were examined. Those types which were examined, according to current usage, are marked in the text with an asterisk (\*).

#### Acknowledgments

We are very grateful to the curators of the collections listed above. We are especially grateful to Dr. Guillermo Kuschel, Auckland, New Zealand, who made his very interesting material of Pacholenini available for study, and furnished important data on relationships. Kuschel had already studied the undescribed species of *Pacholenus*, but did never publish his results, and turned all his specimens over to us.

Ernest Taylor, Oxford, R. T. Thompson, London, and T. Nyholm, Stockholm, were extremely helpful in sending us the types of the described species of *Pacholenus* and *Pileophorus*. R. Hertel, Staatliches Museum fuer Tierkunde, Dresden, entrusted us with the two cotypes of *Tormeuphorus discolobus* Faust, 1893, an unrelated genus as seen above, but whose study was necessary, even though the results are not presented here. Without the help of these colleagues it would not have been possible to present such a complete revision. Their help is gratefully acknowledged.

Giro Pastore of our Museum and A. M. Sakakibara, Departamento de Zoologia, Universidade Federal do Paraná, took the accompanying photographs, which frequently had to be taken in extremely short time, since types were on loan for brief periods. It is a pleasure to thank them.



Frong leg (tarsi not represented): 22, *Antilophus cristulatus* (dorsal view); 23, *Pileophorus nicticans* (*idem*); 24, *Pacholenus pelliceus* (*ibidem*); 25, 26, *Lenopachus tinga* (ventral and dorsal views). Ventral view of pronotum: 27, *L. tinga*; 28, *P. nicticans*. Lateral view of head: 29, *A. cristulatus*; 30, *P. nicticans*.



## TRIBE PACHOLENINI

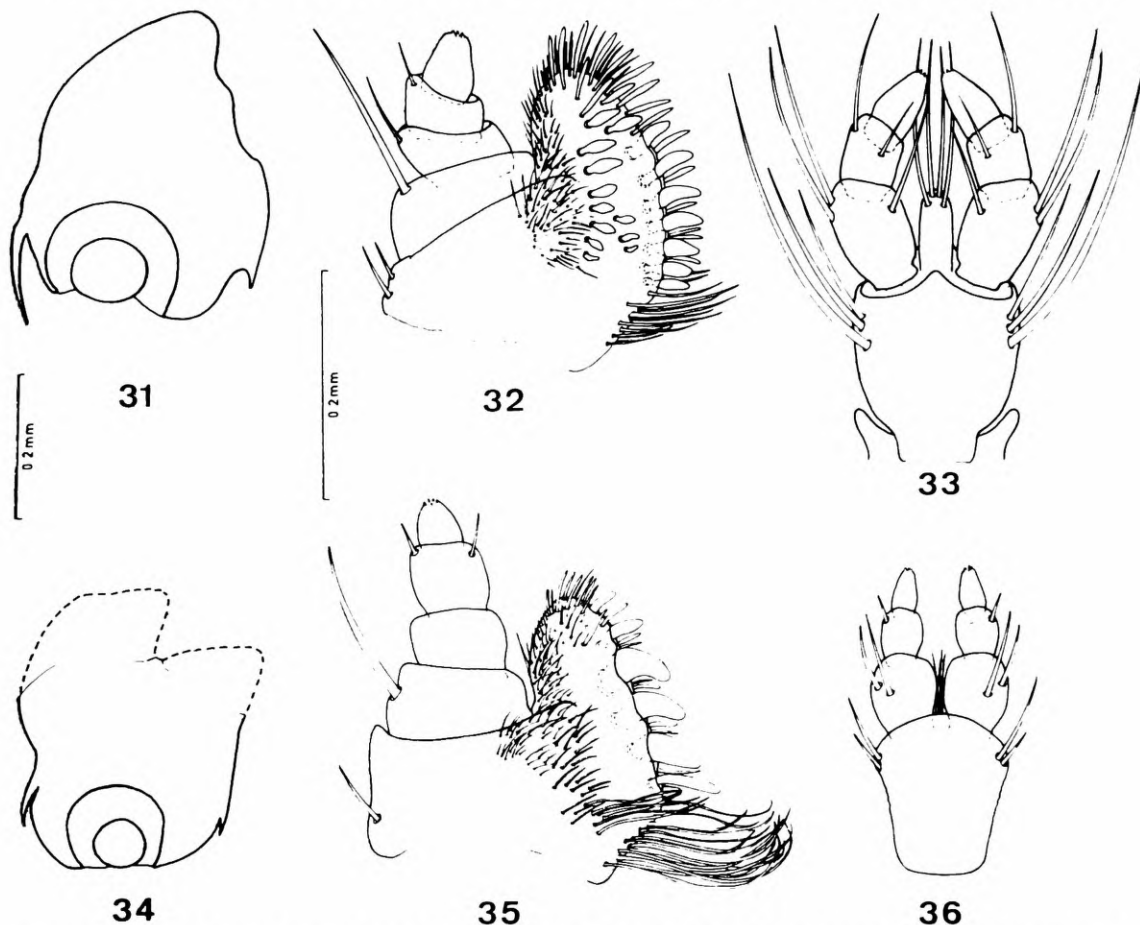
Body elongate, cylindrical. Vestiture formed by decumbent scales and more or less sparse, erect, setiform scales.

Distance between eyes wider than beak width at base. Beak relatively short (at maximum twice as long as head). Antennae short. Scrobes deep and oblique, starting near middle and diverging towards base of beak. Pronotum with anterior bilobed projection over head, partially covering it. Front coxal cavities contiguous or narrowly separated. Front legs larger and stouter than the other pairs. Front femora with large, triangular tooth. Hind femora short, not reaching (in *Pacholenus* and *Lenopachus*) or slightly surpassing (in *Pileophorus* and *Antilophus*) hind margin of abdominal sternite II. Tibiae uncinata. Tarsal claws connate (except *Antilophus*, with free claws).

Type-genus, *Pacholenus* Schoenherr, 1826.

## Discussion

*Mouthparts.* The mouthparts of only two species, *Pileophorus ncticans* (Figs. 31-33) and *Pacholenus hispidus* (Figs. 34-36), were



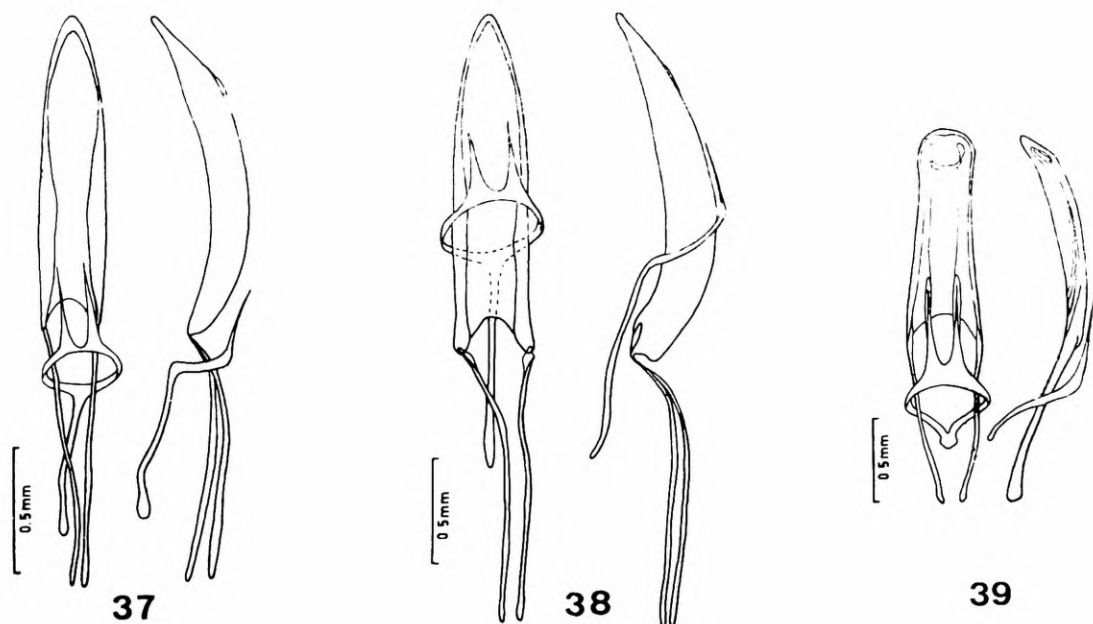
Mouthparts: 31-33, *Pileophorus ncticans*; 34-36, *Pacholenus hispidus*.  
 31, 34, left mandible, dorsal view; 32, 35, right maxilla, ventral view;  
 33, 36, labium, ventral view.

dissected and studied in detail. Because of the scarce material available, *Antilophus* and *Lenopachus* were not dissected, but it was possible to observe the number of teeth of their mandibles.

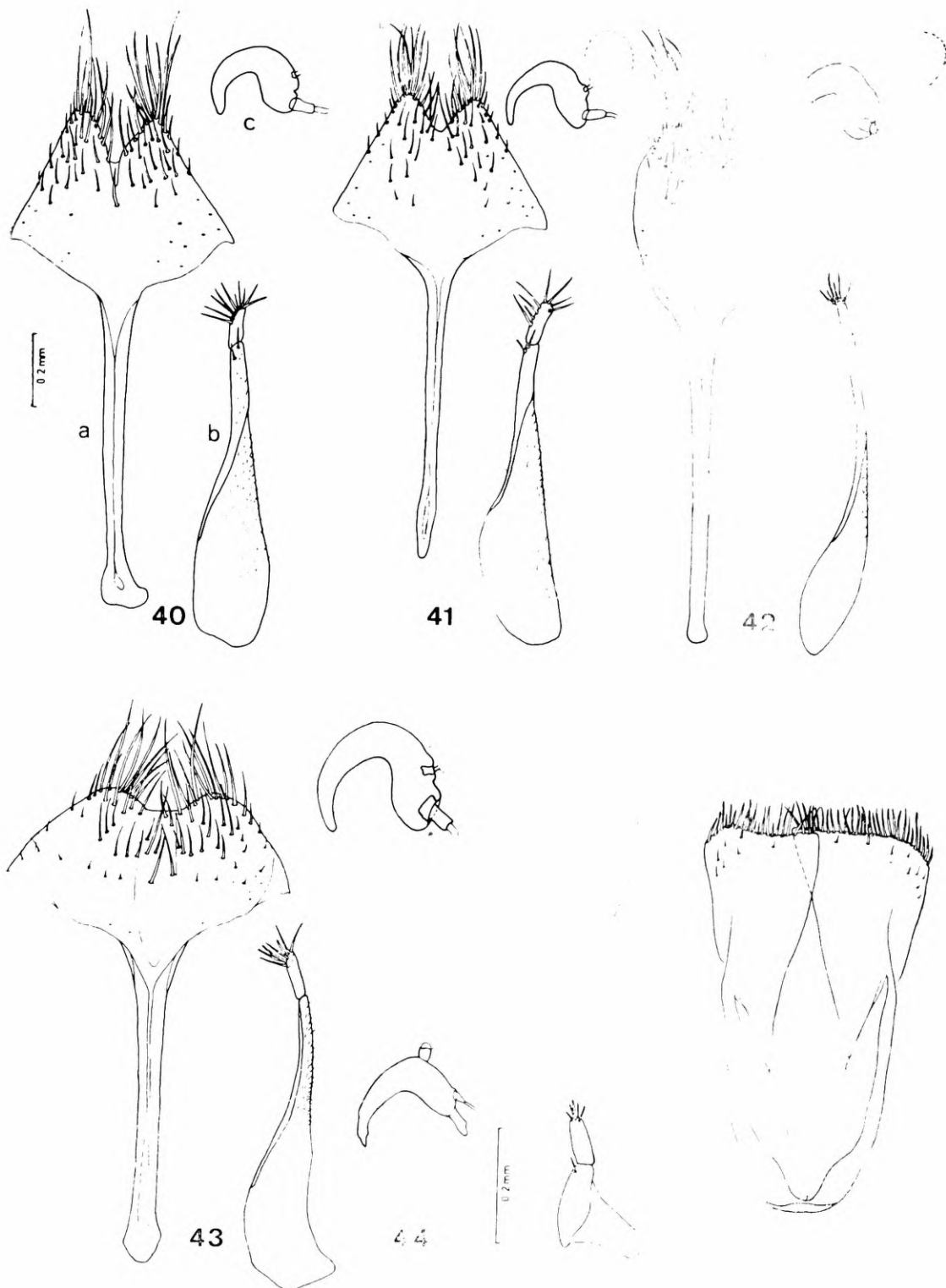
*Labium* with three-segmented palpi, the latter longer than prementum; ligula surpassing front margin of prementum, thus visible ventrally (*Pileophorus*, Fig. 33) or shorter and completely covered by prementum (*Pacholenus*, Fig. 36). *Maxillae* also with three-segmented palpi; lacinial teeth in a single row (*Pacholenus*, Fig. 35) or in two distinct rows (*Pileophorus*, Fig. 32). *Mandibles*. According to Kuschel (1952: 244), *Antilophus* has the left mandible bidentate; the specimen we examined (without dissection), has both mandibles tridentate. The other genera, *Pileophorus*, *Pacholenus* and *Lenopachus*, have bidentate mandibles, the mandibular teeth being weakly developed in *Pileophorus*. *Pacholenus* and *Lenopachus* have very similar mandibles, which are much stouter than those of *Pileophorus*.

From this (incomplete) study of the mouthparts, it becomes apparent that the Pacholenini agree with the Hylobiinae, and it is interesting to note that the maxillae of *Pacholenus hispidus* are very similar to those of *Pissodes strobi* (as illustrated by Hopkins, 1911).

*Genitalia*. The main reason for the study of the genitalia of the Pacholenini was to discover any dimorphism in the tribe. Unfortunately it was only possible to dissect specimens of the few better represented species. For this reason, and also because there is little known on the genitalia of other Hylobiinae, it is impossible to make generalizations. The female genitalia of *Pileophorus* (Fig. 44) merit a more careful study, since they are quite different from those of *Pacholenus* and *Lenopachus*. It should be interesting to study the genitalia of *Antilophus*, which according to external characters is closely related to *Pileophorus*.



Aedeagus dorsal and lateral views: 37, *Pacholenus bifasciatus*; 38, *Lenopachus tinga*; 39, *Pileophorus ncticans*.



Female genital structures (a = sternite VIII; b = left coxite with style; c = lateral view of spermatheca): 40, *Pacholenus canescens*; 41, *P. hispidus*; 42, *P. bifasciatus*; 43, *Lenopachus tinga*; 44, *Pileophorus nicticans*.

*Sexual dimorphism.* As far as could be ascertained the four genera of Pacholenini exhibit the typical dimorphism of most weevils: beak of female slightly longer, less rugose and less scaled than that of male. Due to this dimorphism the lateral sulci of the beak of *Pileophorus* and *Antilophus* are more easily visible in females than in males. As will be discussed under *Pacholenus*, no other dimorphism was noticed.

*Geographic distribution.* As defined in this paper, Pacholenini includes only four genera, all Neotropical (Fig. 45). Three of these, *Pacholenus*, *Lenopachus* and *Pileophorus* are tropical in distribution, and their distribution is probably related to forests. *Pileophorus nicticans* and three species of *Pacholenus* (*penicillus*, *pelliceus* and *hispidus*) are known from the Atlantic Forest along the eastern coast of Brazil; *Pileophorus procerus* is only known from French Guiana. *Pacholenus bifasciatus*, *P. canescens* and *Lenopachus tinga* have only been recorded from Central Brazil, from areas of typically open formations ("cerrados"). They are, however, possibly from forest enclaves or gallery forests, and could be considered as forest elements as well.

The presence of a closely related genus in Chile and neighboring Argentina, *Antilophus*, is most interesting. First it indicates that the group must be quite old, its present-day distribution reminiscent of a time when forests were continuous from Chile to tropical South America. Second, the presence of a genus of Pacholenini in Chile and Argentina suggests that the tribe may not be restricted to the Neotropical Region, but that other genera may be present elsewhere, especially in Australia. Unfortunately our knowledge of weevils from other regions is too poor for any conclusions, and only from literature data it is impossible to find out if there are any related genera.

#### KEY TO GENERA

1. Elytra posteriorly rounded or produced into a caudate process; apex without denticles (Figs. 1-12). Front femora toothed, median and hind ones mutic. Eyes large, reniform, separated from each other by much less than one longitudinal diameter of one eye ..... 2

Elytra posteriorly declivous; apex of each elytron ending in two small denticles (Figs. 13-16). Femora toothed, median and hind ones with small denticles. Eyes rounded, inferiorly acuminate, small, separated from each other by about 3 longitudinal diameters of one eye ..... 3

2. Prothorax conical, tapering towards apex; without discal tubercles (Figs. 2, 4, 6, 8, 10). Front coxae contiguous (Fig. 28). Front tibiae with outer margin rounded at base (Fig. 24). Brazil ..... *Pacholenus* Schoenherr, 1826

Prothorax cylindrical, with constricted front and hind margins; with discal tubercles (Fig. 12). Front coxae slightly separated (Fig. 27). Front tibiae with outer margin forming a sharp angle at base (Figs. 25, 26). Brazil .. *Lenopachus*, gen. n.



3. Tarsal claws connate. Beak almost as long as head (Fig. 30), broad and depressed. Front tibia as in Fig. 23. Brazil, French Guiana ..... *Pileophorus* Schoenherr, 1843

Tarsal claws free. Beak longer than head (Fig. 29), circular in cross section. Front tibia as in Fig. 22. Chile, Argentina ..... *Antilophus* Kuschel, 1952

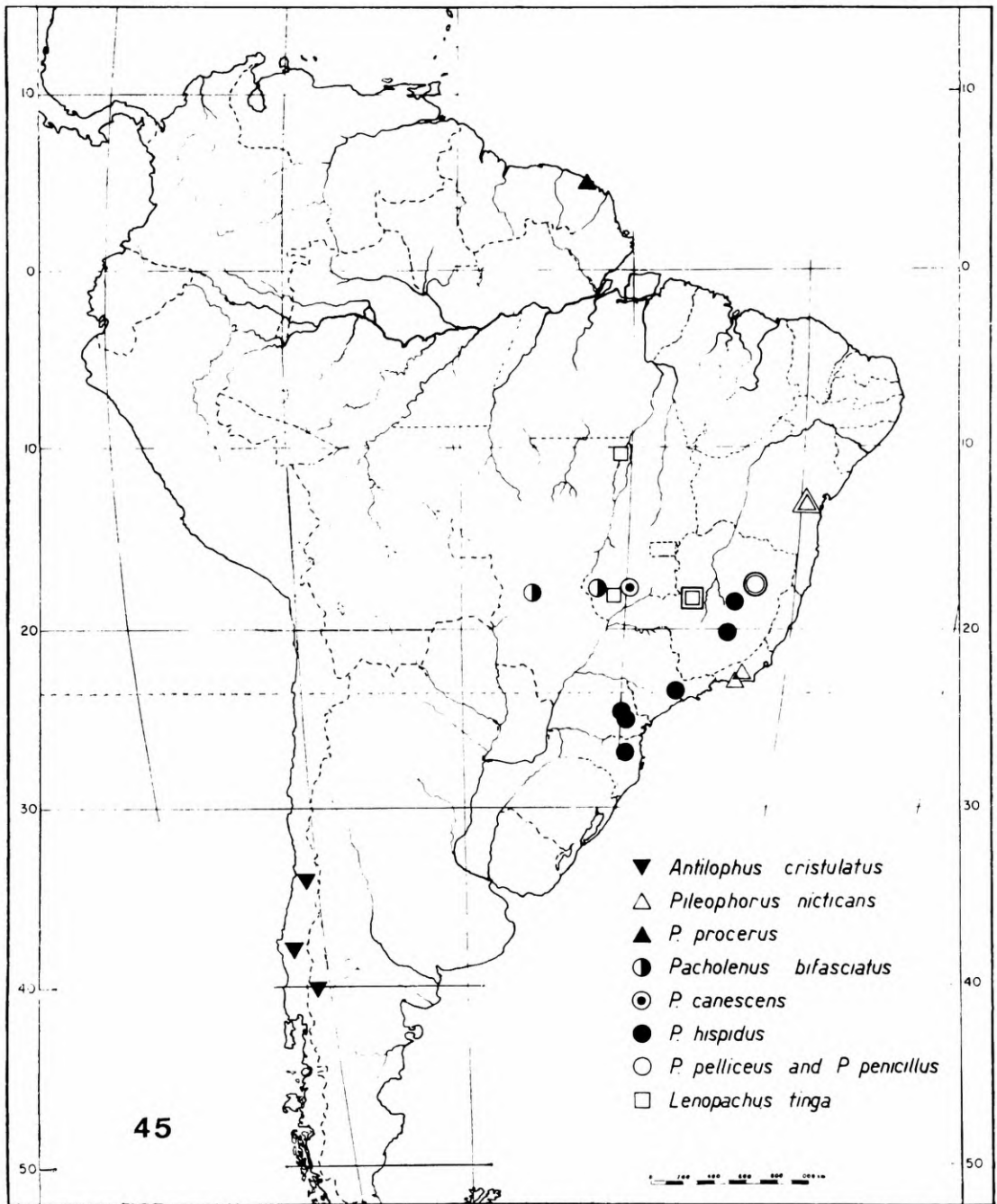


Fig. 45. Geographic distribution of the Pacholenini. (Symbols with double margin representing state records, without exact locality).

**Pacholenus** Schoenherr, 1826

*Pacholenus* Schoenherr, 1826: 216-217; 1836: 101; Castelnau, 1840: 333; Lacordaire, 1863: 444, 445; Gemminger & Harold, 1871: 2420 (Catalog); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog).

Beak longer than head, more or less circular in cross section; unsulcate. Eyes large, approximate ventrally; longest diameter of one eye longer than half height of head. Pronotum without discal tubercles; postocular lobes with vibrissae. Scutellum on same plane of elytra. Elytral interstices not tuberculate, in some species raised, to form weak carinae. Elytral apex rounded. Decumbent vestiture formed by pinnate scales (Fig. 19). Front coxae contiguous (Fig. 28). Front femora with 3-4 pre-apical long setae (Fig. 24). Middle and hind femora without tooth. Tarsal claws connate.

Type-species, *Pacholenus pelliceus* Boheman, 1836, by original designation.

*Discussion.* *Pacholenus*, the largest of the genera studied herein, is closely related to *Lenopachus*, a monotypic genus described below. The genera are easily distinguished by the characters discussed above, as well as by those used in the key.

Up to the present only the two original species described by Boheman were known. Three other species are described as new. Few specimens of each were available; Boheman's species remain only known by their holotypes. The other species are slightly better represented, but their geographic representation is very scant, and does not allow definite conclusions. As discussed under *Pacholenus penicillus*, the type-locality of that species and *P. pelliceus* is unknown, but from their collector it is possible to extrapolate that the two are probably from the Atlantic Forest, from somewhere in the states of Rio de Janeiro, Minas Gerais and Bahia, where Freyreiss travelled and collected. *P. hispidus* is relatively well represented from Atlantic Forest localities from Minas Gerais south to Santa Catarina.

The other two species, *P. canescens* and *P. bifasciatus*, are from Central Brazil (states of Goiás and Mato Grosso).

## Key to species

1. Elytral surface regularly curved from suture to epipleura. Sutural angle produced posteriorly ..... 2  
     Elytral surface with II interstice raised, more or less keeled. Sutural angle rounded ..... 3
2. Sutural angle produced into large caudate process. Dorsal surface of elytra without V-shaped, light bands (Figs. 7-8) .....  
     ..... *penicillus* Boheman, 1836  
     Caudate process much shorter. Dorsal surface of elytra with two V-shaped, light bands, one beginning at humeri and reaching about middle of elytra on suture, and the second beginning

- near middle and reaching the upper part of the declivity on suture (Figs. 1-2) ..... *bifasciatus*, sp. n.
3. II interstice only raised in the middle of elytra. Sutural region on declivity not raised and with normal vestiture. Each elytron with a dark spot near sutural angle (Figs. 3-4) .....  
..... *canescens*, sp. n.
- II interstice raised from base to beginning of declivity. Sutural region raised on declivity, and with a tuft of strong, erect setae. Apex of elytra without spot ..... 4
4. Larger species (10.4 mm). Elytra more abruptly narrowed at apex and setose protuberance on suture less elevated (Figs. 9-10) ..... *pelliceus* Boheman, 1836
- Smaller species (6.5-8.5 mm). Elytra more acuminate towards apex. Setose protuberance on suture more elevated (Figs. 5-6) ..... *hispidus*, sp. n.

***Pacholenus penicillus* Boheman, 1836**  
(Figs. 7, 8, 45)

*Pacholenus penicillus* Boheman, 1836: 102-103 (Holotype ♂, "Brasilia, Freyreiss"; NRMS\*); Castelnau, 1840: 333; Gemminger & Harold, 1871: 2420 (Catalog); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog).

*Head* small. Beak relatively short and slightly arched, about as wide at apex as at base (width about 1/3 of beak length). Antennae inserted in apical third of beak; scrobes deep, on ventral face of beak, obliquely directed to base, but not meeting each other. Antennae: scape about reaching anterior margin of eye; segment II wider and longer than any of the following segments; III longer than IV, IV-VII small, about as wide as long; clube fusiform, four-segmented, sutures obliterated. Eyes large, oval, narrowed ventrally; dorsally separated by as much as beak width, ventrally by slightly less than that. Facetation coarse, with about 10 facets at widest point, and about 25 on length. Frons with slight depression between eyes; this depression glabrous and smooth. Beak and remaining parts of dorsum of head with testaceous, elongate scales; ventrally glabrous. *Pronotum* more or less parallel-sided, front margin produced into a slightly bilobed, median projection, which in part covers head; postocular lobes barely indicated; vibrissae well developed. Surface with coarse and more or less sparse foveolate punctures, which are masked by the cover of testaceous-brownish, elongate setae, except on disc, where scales are much less dense and dark brown. *Scutellum* covered by scales. *Elytra* three times as long as wide, more or less parallel-sided, only narrowed near apex; only slightly wider than pronotum. Apex produced into a caudate process, blunt at apex, curved upwards. Surface of each elytron with 10 striae with very coarse, foveolate punctures; punctures about as large as interstices. Surface covered with short scales, some testaceous, others brown; on epipleurae scales testaceous and longer; apex with tuft of long, reddish-brown scales. Front coxae contiguous; median coxae slightly separated. Front femora with large serrate tooth,

tibiae short and curved. Legs with testaceous, setiform scales, as the ones which cover the ventral surface. Abdominal sternites I and II about equally well developed, each about as long as III-V together; III and IV about as long as V. Suture between I and II obliterated.

*Measurements* (in mm). Total length (pronotum and elytra), 11.9; length of pronotum, 2.7; width of pronotum, 2.6; length of elytra, 9.2; width of elytra, 3.0; length of beak, 2.1; width of beak, 0.75.

*Material examined.* Holotype ♂, "Brasilia, Freyreiss" (NRMS).

*Notes on the holotype.* The single known specimen of this species was collected by Freyreiss in Brazil. The only known specimen of the other species described by Boheman, *Pacholenus pelliceus*, a female, was collected by the same naturalist, and at first we suspected both might represent male and female of one species. As examination of the other species of the genus did not reveal any marked sexual dimorphism, this possibility was discarded.

Unfortunately the exact locality of the two species remains unknown. According to Papavero (1971: 58-59) Freyreiss' travels in Brazil were not too extensive: he visited the state of Minas Gerais (coming from Rio de Janeiro), and later travelled from Rio de Janeiro to Salvador (Bahia), along the coast. The two species must, thus, occur somewhere in this area of the Atlantic Forest.

*Discussion.* *Pacholenus penicillus* is characterized by the well developed, caudate apical process of elytra, and seems to be related to *Pacholenus bifasciatus*. The two species are distinguished from the remaining species of the genus by the regularly curved, non carinate elytral surface.

#### ***Pacholenus bifasciatus*, sp. n.**

(Figs. 1, 2, 28, 37, 42, 45)

*Types.* Holotype, BRAZIL, *Mato Grosso*: Rio Verde, 400 m, X.1965 (A. Maller) (DZUP). Paratypes, 1♂, 1♀, *Goiás*: Jataí (EDNZ); 1♂, *idem, ibidem* (MZSP); 1 ex., *idem, ibidem*, 1895-1896 (Ch. Pujol) (MNHN).

Brownish, with whitish scales on sides of pronotum, and two V-shaped bands on elytra, a basal one beginning at humeri and reaching about the middle on suture, and the second beginning near middle and reaching the upper part of the declivity on suture. Sides of pronotum, elytra and legs with long, sparse, semi-erect white setae; frons with same type of setae, but much more sparse; ventrally these setae are slightly shorter and almost recumbent. Disc of pronotum with short, semi-erect, brownish setae.

*Head* normal; beak slightly arched, more sparsely scaled than frons. *Pronotum* only slightly narrowed towards base and apex; narrower than elytra; anterior protuberance relatively small, densely setose. *Scutellum* small, covered with scales. *Elytra* elongate, more or less parallel-sided; only narrowed in apical fourth, sutural angle with small and setose caudate process; elytral interstices not raised, elytra thus



regularly curved from suture to epipleura; elytral striation obliterated by scales. *Genitalia*. Male (Fig. 37). Female (Fig. 42).

*Measurements* (in mm). Total length (pronotum and elytra), 7.6-9.5; length of pronotum, 1.7-2.3; width of pronotum, 1.7-2.1; length of elytra, 6.0-7.1; width of elytra, 2.3-2.9; length of beak, 1.5-1.8; width of beak, 0.5-0.6.

*Discussion*. As mentioned above, *Pacholenus bifasciatus* is more closely related to *Pacholenus penicillus* than to the other species of the genus, on account of the caudate process of elytra, and the unraised elytral interstices. *P. bifasciatus* is easily distinguished from all species of the genus by the two V-shaped, whitish bands on elytra.

***Pacholenus pelliceus* Boheman, 1836**  
(Figs. 9, 10, 24, 45)

*Pacholenus pelliceus* Boheman, 1836: 101 (Holotype, "Brasilia"; NRMS\*); Gemminger & Harold, 1871: 2420 (Catalog); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog).

*Head* as in *penicillus*, apparently with more closely packed scales. *Pronotum* also as in *penicillus*, but again scales apparently more closely packed, and on the darker and foveolate median area, with two different types of scales, the short, testaceous scales, and some more scattered and longer, darker scales. *Scutellum* pre-basal, apparently very small, losangular, masked by scales. *Elytra* only slightly over twice as long as wide, parallel-sided and abruptly rounded at apex, without caudate process. Surface of elytron with 10 striae, similar to those of *penicillus*, but less evident; II interstice (sutural interstice excluded) raised in anterior half; VIII raised from base to near apex; III, IV and V slightly raised on posterior declivity. Surface with dense cover of short, testaceous scales, and a few longer ones intermixed; the latter, usually darker in color, much more densely packed on raised interstices and along suture, especially on declivity, where they form an elongate brush of scales. Ventrally, including legs, as in *penicillus*.

*Measurements* (in mm). Total length (pronotum and elytra), 10.4; length of pronotum, 2.9; width of pronotum, 2.5; length of elytra, 7.5; width of elytra, 3.0; length of beak, 2.0; width of beak, 0.75.

*Material examined*. Holotype (♀ ?), "Brasilia" (NRMS).

*Note on the holotype*. See discussion under *Pacholenus penicillus*.

*Discussion*. By the more or less keeled II elytral interstice *Pacholenus pelliceus* is more closely related to *Pacholenus canescens* and *Pacholenus hispidus*. It is apparently closest to *Pacholenus hispidus*, but easily distinguished by its much larger size (in size *Pacholenus pelliceus* is similar to *Pacholenus penicillus*) and the different setose protuberance on apex of elytra.

**Pacholenus canescens**, sp. n.

(Figs. 3, 4, 40, 45)

*Types.* Holotype, BRAZIL, Goiás: Jataí (Pujol) (BMNH). Paratypes, 1 ex., *idem*, *idem* (MZSP); 2 paratypes, same locality (EDNZ).

Reddish-brown, intermixed with whitish scales, especially on sides of pronotum and elytra. Pronotum and elytra with long, white, semi-erect setae, as in *bifasciatus*. Head and beak with dense white, semi-erect, but short setae. Apex of elytra with small, brown spot on each side of suture.

*Beak* relatively short and stout, with shining and dark integument. *Pronotum* widest near base, and somewhat narrowed towards front. Anterior protuberance well developed, clearly bilobed and setose. *Scutellum* hidden under scales. *Elytra* wider than pronotum, nearly parallel-sided, only narrowed in apical fourth; apical margin rounded, not expanded into process. II elytral interstice raised and convex from base to slightly beyond middle. Elytral acavity not abrupt, without tumescence or special vestiture. *Genitalia.* Female (Fig. 40).

*Measurements* (in mm). Total length (pronotum and elytra), 9.3-9.8; length of pronotum, 2.4-2.5; width of pronotum, 2.2-2.4; length of elytra, 6.9-7.5; width of elytra, 3.2-3.6; length of beak, 1.7-1.8; width of beak, 0.7.

*Discussion.* Even though related to *Pacholenus pelliceus* and *Pacholenus hispidus*, *Pacholenus canescens* is easily characterized by the weakly raised II elytral interstice, and by the unarmed apical part of elytra (see Figs. 3, 5 and 9). The dark spots at apex of elytra are also very characteristic, and not found in any other species of the genus.

**Pacholenus hispidus**, sp. n.

(Figs. 5, 6, 19, 34-36, 41, 45)

*Types.* Holotype ♀, BRAZIL, Paraná: Curitiba, X.1936 (MZSP). Paratypes. Minas Gerais: Diamantina, Fazenda das Melancias (1♀, EDNZ); Santa Bárbara, Serra do Caraça, VII-XII.1884 (P. Germain) (1 ex., EDNZ). São Paulo: São Paulo, Jabaquara, 5.XI.1950 (Nick) (1♀, EDNZ). Paraná: Ponta Grossa, Lageado, XI.1944 (F. Justus) (1 ex., DZUP). Santa Catarina: Corupá (ex-Hansa Humboldt), 100 m, XII.1927 (A. Maller) (1 ex., BMNH). "Brésil", no locality (1 ex., MNHN).

*Head* as in *penicillus*, but beak almost glabrous from antennal insertion to apex, and scales on dorsal part of beak and between eyes very long. *Pronotum* more or less as long as wide, parallel-sided, except for a slight narrowing anteriorly; anterior projection raised, only very slightly bilobed. Surface with dense cover of short, rufous scales, plus scattered, erect, long and testaceous setae. *Scutellum* not visible. *Elytra* 2.4 times as long as wide, wider than pronotum, very slightly widened from base to middle, and then regularly narrowed towards the curved apex (less abruptly than in *pelliceus*). Each elytron more or less as in *pelliceus*, with same raised interstices, and same

types of scales. Ventrally, including legs, as in *penicillus* and *pelliceus*. *Genitalia*. Female (Fig. 41).

*Measurements* (in mm). Total length (pronotum and elytra), 6.7-8.5; length of pronotum, 1.5-2.1; width of pronotum, 1.5-1.8; length of elytra, 5.0-6.1; width of elytra, 2.1-2.6.

*Discussion*. *Pacholenus hispidus* is closely related to *Pacholenus pelliceus*, but is smaller, and the apical brush of scales on declivity is larger than in *pelliceus*, and placed on the tumidity of the suture; the individual scales of this brush are longer than in *pelliceus*.

*Pacholenus hispidus* is apparently distributed along the Atlantic Forest, from Minas Gerais south to Santa Catarina.

#### **Lenopachus**, gen. n.

Beak longer than head, more or less circular in cross section, arched and unsulcate. Eyes as in *Pacholenus*. Scutellum very prominent, placed higher than elytra, thus easily and clearly visible. Pronotum with discal tubercles; postocular lobes with vibrissae. Elytral interstices not tuberculate; apex of elytra rounded. Decumbent vestiture formed by flat scales (Fig. 21). Front coxae slightly separated (Fig. 27). Front femora with 3-4 pre-apical, long setae (Figs. 25-26). Middle and hind femora without tooth. Tarsal claws connate.

Type-species, *Lenopachus tinga*, sp. n.

*Discussion*. *Lenopachus*, a monotypic genus, is closest to *Pacholenus*, but distinguished by several characters, of which the most important are the slightly separated front coxae (Fig. 27). Furthermore, the shape of pronotum and elytra is quite different; front tibiae have a well-marked angle on outer margin, near base; the decumbent vestiture is formed by flattened scales instead of the well-developed pinnate scales of *Pacholenus*. Male and female genitalia of *Lenopachus* are very similar to those of the species of *Pacholenus*.

One of the paratypes of *Lenopachus tinga* was received from Kuschel labelled *Pacholenus* sp. n. As said above, the two genera are similar, but it is impossible to include *tinga* in the same genus as the other species assigned to *Pacholenus*, which form a very homogeneous genus.

Only three specimens of *Lenopachus tinga* are thus far known, and the species is apparently sympatric with *Pacholenus bifasciatus* and *Pacholenus canescens* in Central Brazil.

#### **Lenopachus tinga**, sp. n.

(Figs. 11, 12, 21, 25-27, 38, 43, 45)

*Types*. Holotype ♀, BRAZIL, Mato Grosso: Barra do Tapirapés, XII.1960 (B. Malkin) (MZSP). Paratypes: Goiás: Jataí (1♂, EDNZ). Minas Gerais: no locality (1 ex., BMNH).

Elongate-cylindrical, densely covered with white scales, as well as few darker scales which form a post-scutellar spot and other spots at elytral apex. Anterior protuberance of pronotum not well developed.

Eyes large, separated as much as width of beak at base and approximate ventrally. Frons plane, with a longitudinal foveole, glabrous (holotype ♀) or covered with dark brown scales (paratype ♂). Vertex with dense, white scales, a few others ferruginous, sparse and with two rounded, lateral spots of dark brown scales (surrounded by ferruginous scales in the holotype ♀). Beak dark reddish-brown, glabrous (holotype ♀) or covered with white, ferruginous and dark brown scales on basal half (paratype ♂); arched, cylindrical, slightly widened towards apex; antennal insertion slightly above middle; scrobes directed towards ventral face, almost confluent. Antennae reddish-brown; scape almost reaching eyes; flagellum seven-segmented; II segment largest and widest, III slightly smaller than II, about as long as IV and V together; IV to VIII short and wide; club elongate-oval, four-segmented, segments clearly separated from each other by sutures, and covered with sericeous, dense pubescence. *Pronotum*. Integument completely covered with white, short and imbricated scales, and with some short, sparse, longer and erect scales. Cylindrical, convex; about as long as wide, widest in anterior third, constricted at apex; apex with short, median tubercle which is bisinuate anteriorly, and little projected over head, covered with ferruginous scales anteriorly; postocular lobes weakly developed, with long vibrissae; posterior margins rounded; pronotal sculpture formed by nine small protuberances, five on disc and two on each side, the two posterior ones the best developed. *Scutellum* rounded, prominent, covered with white scales. *Elytra* cylindrical, convex, approximately two and half times as long as pronotum; base oblique, humeri rounded, not very salient; almost parallel-sided; apices truncate (each apex independently rounded); striae clearly punctate, punctures well separated and deep; interstices convex, the I and X slightly salient on apical region, and V forming a small, elongate callus; integument reddish-brown, covered with white, short and imbricated scales, which are more or less dense, and long and erect, white scales more or less in rows along interstices and dense at base; a few of the short, white scales are iridescent, especially on sides. Behind scutellum with a short macula of dark brown scales; apical region with ferruginous and dark-brown scales between white ones, especially on suture, callus of V interstice and area of fusion of II and X interstices. *Ventral face* with brown tegument, reddish on legs and abdomen, covered with elongate, white scales; prosternum with sparse scales. Abdominal process acute; suture between abdominal sternites I and II only clear on sides, curved; sternites III and IV short, with straight sutures, glabrous on disc; V with ferruginous scales. Front legs better developed than median and hind ones. Front femora with serrate tooth; apex, internally, with three long setae. Front tibiae with setose sulcus on inner face. Median and posterior femora mutic; tibiae not sulcate; hind femora reaching only slightly beyond I abdominal sternite. Tarsal claws connate at base. Front femora with dark brown scales and a few white and ferruginous scales, the latter especially on apex; front tibiae with sparse ferruginous and dark brown scales. Median and hind legs with white scales. *Genitalia*. Male (Fig. 38). Female (Fig. 43).



*Measurements* (in mm). Total length (pronotum and elytra), 8.2-8.9; length of pronotum, 2.2-2.4; width of pronotum, 2.2-2.5; length of elytra, 6.0-6.5; width of elytra, 2.4-2.8; length of beak, 1.7; width of beak, 0.6.

### **Pileophorus** Schoenherr, 1843

*Pileophorus* Schoenherr, 1843: 148; Lacordaire, 1863: 444, 446; Gemminger & Harold, 1871: 2420 (Catalog); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog).

*Beak* short and broad, depressed, usually slightly narrower at base than at apex; with two short, longitudinal sulci beneath the scrobes, each with a row of few prominent scales (Fig. 30). Antennal grooves deep, lateral, beginning near middle and obliquely converging to base, without fusing. Eyes very small, separated from each other by about three transverse diameters of one eye. *Pronotum* with raised V-shaped carina, base of V slightly projected over head; pronotum tuberculate on sides. Without postocular lobes. *Elytra* with tuberculate interstices; apex of elytra more or less transverse, with an outer and an inner (juxta-sutural) angle. Front coxae slightly separated. Middle and hind femora with small tooth, not sulcate. Tarsal claws connate.

Type-species, by original designation and monotypy, *Pileophorus nicticans* Boheman, 1843.

*Discussion.* *Pileophorus* is well characterized by the small eyes, the short and depressed beak with lateral sulci, the shape and tubercles of pronotum, and the tuberculate elytra and their apex. These characters approximate *Pileophorus* and *Antilophus*, the latter from the Chilean-Argentinian fauna. Both genera share most of the above characters, and are distinguished from each other especially by the tarsal claws, connate in *Pileophorus* (as in *Pacholenus* and *Lenopachus*), free in *Antilophus*. As seen in the key to genera, *Pileophorus* and *Antilophus* are distinguished from *Pacholenus* and *Lenopachus* by a series of characters, especially the toothed femora (only front ones toothed in *Pacholenus* and *Lenopachus*) and size of eyes. Male and female genitalia are also very different.

Only two species of *Pileophorus* have been described, the type-species, known from a few localities in eastern Brazil (Atlantic Forest), and *procerus*, of which only the holotype from Guiana was known.

### Key to species

1. Pronotum without a light-colored median band. Elytra nearly parallel from humeri to apex; elytral interstices raised, forming short or elongate tubercles; punctures of elytral striae not clearly visible on disc. Brazil (Bahia and Rio de Janeiro) (Figs. 15-16) ..... *nicticans* Boheman, 1843

Pronotum with a light-colored median and longitudinal band at about basal half. Elytra slightly and gradually narrowed from basal third to apex; elytral interstices not raised in tubercles;

all punctures of elytral striae clearly visible, forming distinct rows. French Guiana (Fig. 17) .... *procerus* Pascoe, 1880

***Pileophorus procerus* Pascoe, 1880**  
(Figs. 17, 45)

*Pileophorus procerus* Pascoe, 1880: 490 (Holotype, French Guiana, Cayenne; BMNH\*); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog).

*Beak* relatively short, slightly narrower at base than at apex, here only slightly narrower than frons between eyes; frons and beak covered with circular, flat, appressed scales, intermixed with a few sparse, elongate scales; apical part of beak only with the sparse and elongate scales, leaving the black integument uncovered. Scrobes starting near middle, and obliquely directed to base, but not meeting each other. Scape about as long as club, covered with cream-colored scales, as frons; pedicel larger than each of the funicular segments, these small, increasing regularly in width towards club; pedicel, funiculus and club with sparse, elongate scales, which do not cover the surface of the segments, as on scape. *Pronotum* widest anteriorly, only very slightly narrowed towards base; front margin projected in the middle to form a short, bilobed projection extending beyond head; the latter almost completely covered when seen from above; surface regularly arched, with two very low and curved carinae starting in anterior third and converging toward anterior projection. Surface completely covered with differently colored, fine scales, with a light median and longitudinal band on basal half. *Scutellum* small, prominent, quadrangular and glabrous, shiny. *Elytra* about as wide as pronotum, widest just behind humeri, very slightly narrowed towards apex; at apex forming a prominent angle, apical margin concave and sutural angle also prominent. Basal margin emarginate, projected over pronotum, and raised, especially near scutellum. Each elytron with 10 rows of large and sparse punctures (about 18 from base to top of declivity in I stria), each puncture with a small, dark scale in the middle; interstices convex, but not forming clear carinae, except the VII (from humeri to declivity), VIII (from humeri to near the middle) and IX (from humeri to outer apical angle), which are more or less costate; the IX with a row of short but conspicuous, clear-colored, elongate scales. I interstice slightly raised at the top of declivity; III, IV and V forming a tubercle which is covered with light colored scales; suture tumid on declivity. Surface of elytra covered with scales as pronotum.

*Measurements* (of holotype, in mm). Total length, 8.0; length of pronotum, 2.7; width of pronotum, 2.5; length of elytra, 5.4; width of elytra, 2.5; width of beak at apex, 0.8; distance between eyes, 1.0.

*Material examined*. FRENCH GUIANA: Cayenne (holotype, BMNH). No locality (1 ex., MNHN).

*Discussion*. *Pileophorus procerus* is very closely related to the other species of the genus, *Pileophorus ncticans*. *Pileophorus procerus* is distinguished from *Pileophorus ncticans* by the elytra, gradually and very slightly narrowed from basal third to apex (about parallel

to apex in *nicticans*), by the elytral interstices not raised in tubercles, except on top of declivity (interstices raised, forming short or elongate tubercles on whole surface in *nicticans*), by all punctures of elytral striae clearly visible (only punctures of sutural and lateral striae clearly visible, those of disc not well distinct in *nicticans*), and by the sharp outer apical elytral angle (poorly developed in *nicticans*).

The two species are alopatric, *Pileophorus procerus* only being known from French Guiana, and *Pileophorus nicticans* from a few localities in eastern Brazil.

***Pileophorus nicticans* Boheman, 1843**  
(Figs. 15, 16, 20, 23, 30-33, 39, 44, 45)

*Pileophorus nicticans* Boheman, 1843: 149-150 (Holotype, "Brasilia prope Novum Friburgum"; HDEO\*); Lacordaire, 1863: 447, pl. 70, figs. 5, 5a-d.

*Pileophorus nicticans* (*error*); Gemminger & Harold, 1871: 2420 (Catalog); Dalla Torre, Schenkling & Marshall, 1932: 26 (Catalog); Blackwelder, 1947: 824 (Catalog); Costa Lima, 1956: 107, fig. 96.

*Coloration.* With dense cover of light-brown, imbricated scales, which are slightly lighter on sides of pronotum and ventral face. Median elytral and declivity tubercles with dark scales. Slightly behind median tubercles an oblique band of whitish scales on each elytron, the band narrow and restricted to interstices I to V; another whitish band on elytral declivity. In some cases the light colored bands are not very clear, and the specimens are then completely brown.

*Head* and beak as in *procerus*, but the latter wider at apex, without depression in basal half (probably a female); apex with more erect and sparse setae, leaving the reddish-brown integument visible. *Pronotum* strongly constricted at base; widest just behind constriction, and slightly narrowed backwards; base of pronotum slightly narrower than base of elytra. Pronotal projection similar to that of *procerus*; margin of pronotal constriction with four small tubercles. *Scutellum* as in *procerus*. *Elytra* more or less parallel-sided, slightly wider than pronotum at base (elytral apex similar to that of *procerus*, with outer and inner apical angles sharp, the inner apical angle forming a tooth independent of the sutural angle). Elytral disc, slightly behind middle, with a oblique band of white scales; another oblique band shortly after elytral declivity, and with white scales on declivity. Anterior elytral margin projected over pronotum, with a series of small, shiny, black tubercles. I interstice with elongate tubercle slightly behind scutellum; slightly in front of the oblique, white band, two elongate tubercles in interstices I and IV, tubercles covered with dark scales; elytral declivity with tubercles on I interstice, and with a larger tubercle formed by fusion of interstices III, IV and V; interstices with variable number of small tubercles. *Genitalia.* Male (Fig. 39). Female (Fig. 44).

*Measurements* (of holotype, in mm). Total length (pronotum and elytra), 8.1; length of pronotum, 2.7; width of pronotum, 2.6; length of elytra, 5.5; width of elytra, 2.8; width of beak at apex, 0.8; distance between eyes, 1.1.

*Material examined.* BRAZIL. *Rio de Janeiro:* Nova Friburgo (holotype ♀ ?, HDEO); Rio de Janeiro (Corcovado) (7 exs., MZSP, DZUP, COPC); *idem*, Represa Rio Grande (1♀, DZUP). *Bahia:* no locality (1♂, 1♀, EDNZ).

*Discussion.* Relationships with the other species of the genus, *Pileophorus procerus*, have been discussed above.

*Pileophorus ncticans* has been seen from the State of Rio de Janeiro (several specimens) and Bahia, suggesting a distribution along the Atlantic Forest.

### **Antilophus** Kuschel, 1952

*Antilophus* Kuschel, 1952: 244-245.

*Beak* longer than head, more or less circular in cross section (not depressed), slightly arched; on each side with a lateral sulcus from which arise about seven broad scales (Fig. 29); scrobes deep, lateral, obliquely curved to base, not meeting each other; with small, circular opening on sides, near apex. Eyes small, their largest diameter about one fourth of height of head; separated from each other by about three transverse diameters of one eye. *Pronotum* as in *Pileophorus*, with long and dense scales around anterior part of V-shaped projection; sides of pronotum tuberculate; without postocular lobes. Elytra irregularly tuberculate, with interstices II and III raised and tuberculate near base (the II shorter, beginning behind base, the III beginning at base); declivity with III and IV interstices raised to form a conic tubercle; apex with small sutural spine and acute outer apical angle. Front coxae contiguous. Middle and hind femora with small denticle. Tarsal claws free.

Type-species, by original designation, *Antilophus cristulatus* Kuschel, 1952.

*Discussion.* *Antilophus*, described as a genus of Hylobiini (Syphorbina), is most closely related to *Pileophorus*. In the original description *Antilophus* was not considered as related to that genus, nor compared to it, because *Pileophorus* was unknown to Kuschel at that time (Kuschel, *in litt.*).

*Antilophus* and *Pileophorus* share a great number of characters, especially the general shape of the body, including head (even though the beak is long in *Antilophus* and short and depressed in *Pileophorus*), the small eyes, the lateral, scaled sulci (= gular sutures of Kuschel, 1952), etc.. The most striking difference, however, are the free tarsal claws of *Antilophus*, a very aberrant character in Pacholenini.

Relationships to *Pacholenus* and *Lenopachus* are less evident, as has already been seen in the key to genera.

*Antilophus* is a monotypic genus, only known from Chile and neighboring Argentina (Neuquén). As Kuschel's original description of the species is quite extensive and good, it is not necessary to repeat a description here, since *Antilophus* is well characterized by the above description. Some comments on the species, however, are necessary.



***Antilophus cristulatus* Kuschel, 1952**  
(Figs. 13, 14, 18, 22, 29, 45)

*Antilophus cristulatus* Kuschel, 1952: 245-246 (Holotype ♂, Argentina, Neuquén, San Martin de los Andes; EDNZ, not seen).

*Material examined.* CHILE. *Santiago*: Aculeo (1 ex., BMNH).

*Discussion.* The species was originally described from the type-locality (1♂) and from Chile, "sin localidad, pero probablemente de Pemehue" (1♂, 2♀). The above specimen is thus the first Chilean specimen with exact locality (Aculeo is a small locality about 50 km from Santiago). The species is apparently very variable in size. Kuschel (1952: 246) gives the total length as varying from 5.7 to 9 mm, and width from 1.8 to 3.1. Our specimen measures as follows (in mm): total length (pronotum and elytra), 10.9; length of pronotum, 3.4; width of pronotum, 3.2; length of elytra, 7.3; width of elytra, 3.5; width of beak at apex, 0.8; distance between eyes, 1.0.

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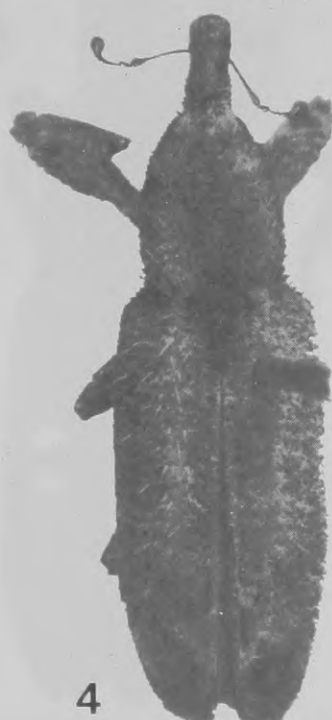
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(Synonyms in italics)

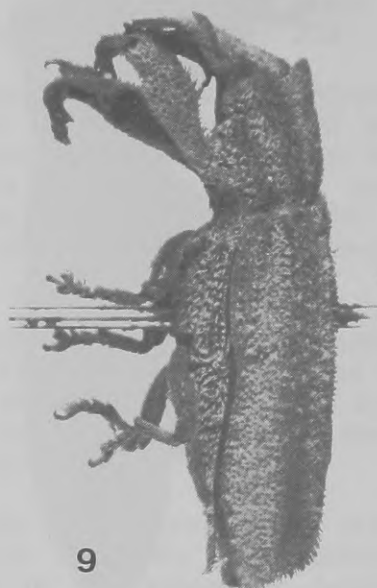
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Figs. 1, 2, *Pacholenus bifasciatus* (holotype). 3, 4, *P. canescens* (holotype). 5, 6, *P. hispidus* (paratype from Corumbá). (P. Pastore phot.).



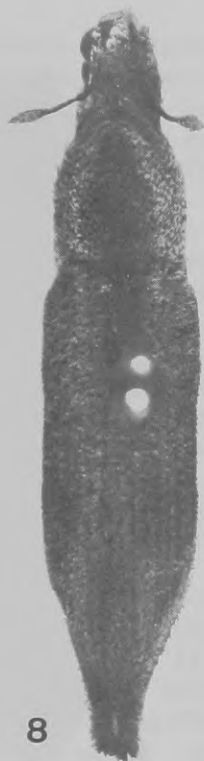
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Figs. 7, 8, *Pacholenus penicillus* (holotype). 9, 10, *P. pelliceus* (holotype). 11, 12, *Lenopachus tinga* (holotype). (G. Pastore phot.).



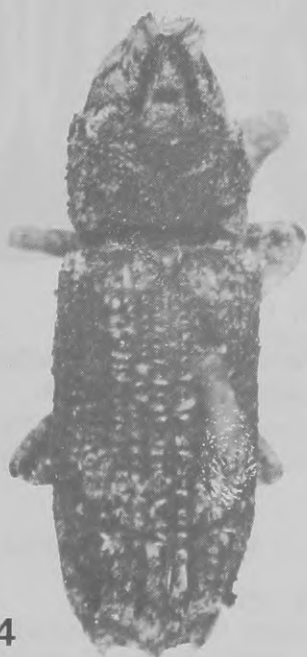
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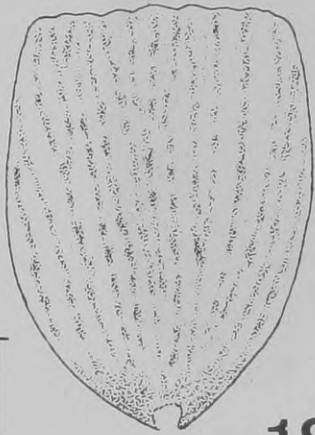
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Figs. 13, 14, *Antilophus cristulatus*. 15, 16, *Pileophorus ncticans* (holotype). 17, *P. procerus* (holotype). (G. Pastore phot.).





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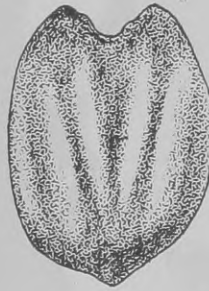
19



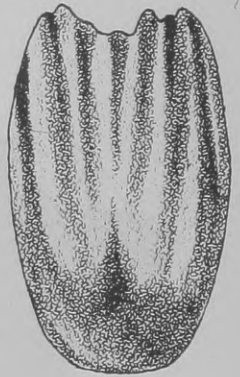
50  $\mu$



20



21



Decumbent scales from elytra: 18, *Antilophus cristulatus*. 19, *Pacholenus hispidus*. 20, *Pileophorus nicticans*. 21, *Lenopachus tinga*.