THORACONAUPACTUS, A NEW BRAZILIAN GENUS OF BROAD NOSED WEEVIL (COLEOPTERA: CURCULIONIDAE: ENTIMINAE) ASSOCIATED WITH *LEUCAENA* (FABACEAE)[1]

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ABSTRACT: A new monotypic genus of Naupactini (Coleoptera: Curculionidae), *Thoraconaupactus* del Rio and Lanteri is described based on the new species *Thoraconaupactus vaninii* del Río and Lanteri (Type locality: Brazil, Bahia, Itaji). Two different morphotypes are distinguished by characters of the vestiture: one from Itaji, with integument brown, smooth, and vestiture mostly setose; the other from Ibiraba with integument black, rugose and vestiture mostly squamose. *Thoraconaupactus* is similar to *Naupactus* Dejean and *Teratopactus* Heller in several characters, and shows some unique features such as the strongly transverse pronotum with a sub-basal tooth-like projection on each side. Specimens were collected in association with a species of *Leucaena* (Fabaceae). The paper includes habitus photographs and line drawings of genitalia, mouthparts, and other external features of taxonomic value.

KEY WORDS: Curculionidae, Naupactini, *Thoraconaupactus vaninii*, new genus, new species

The tribe Naupactini (Curculionidae: Entiminae) consists of approximately 65 genera (Alonso-Zarazaga and Lyal, 1999) with over 500 species mainly distributed in Central and South America. Most species of this weevil tribe have been classified in *Naupactus* Dejean, a genus currently under revision, which includes 161 species (O´Brien and Wibmer, 1982; Wibmer and O´Brien, 1986) or 214 according to Morrone (1999), who included all *Pantomorus* Schoenherr species from South America within *Naupactus*. The genus *Naupactus* is not only a key genus to understanding the phylogeny of the Naupactini but also a taxon that contains a great number of agricultural pest species, such as the "white-fringed beetle," *N. leucoloma* Boheman and the "rose weevil," *N. cervinus* Boheman (Scataglini et al., 2005). These species cause serious damage to legumes, citrus, ornamental plants, and several other cultures (Lanteri and Marvaldi, 1995; Lanteri et al., 2002).

In the present contribution we describe a new monotypic genus of Naupactini close to *Naupactus* and *Teratopactus* Heller, the latter recently revised by del Río et al. (2006). The new genus *Thoraconaupactus* is endemic to northeastern Brazil and its single species was collected on *Leucaena* sp. (Fabaceae).

METHODS

This study is based on specimens housed at the Museu de Zoologia da Universidade de São Paulo, SP, Brazil (MZSP). No other specimens have been seen

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in other entomological collections examined. One paratype specimen has been deposited at Museo de La Plata (MLPC).

Dissections of female and male genitalia were made according to standard entomological techniques. Specimens were drawn using a camera lucida adapted to a stereoscopic microscope. Measurements were taken with an ocular micrometer. Abbreviations herein used are the following: WF—width of frons between anterior margin of eyes; WR—width of rostrum across apex; LR—length of rostrum from anterior margin of eye to apex; WC—maximum width of club; LC—maximum length of club; WP—maximum width of pronotum; LP—maximum length of pronotum; WE—maximum width of elytra; LE—maximum length of elytra. The terminology used for the metatibial apex follows Thompson (1992). 'Outer bevel present' is used instead of 'corbel enclosed' (Emden, 1944), and 'metatibial apex simple or bevel absent,' instead of 'corbel open.'

Type labels include the species name, the type status and the authors of the name. They are red and yellow for holotype and paratypes, respectively. The sex of each specimen is also indicated.

SYSTEMATIC ENTOMOLOGY

Thoraconaupactus new genus, del Río and Lanteri

Type species: *Thoraconaupactus vaninii* new species, del Río and Lanteri. Herein designated by monotypy.

Etymology: The generic name is a combination of the latin word *thorax* (referring to the particular subtrapezoidal and tuberculate pronotum) and *naupactus* (alluding to its probable close relationship to *Naupactus* Dejean).

Diagnosis: *Thoraconaupactus* is easily distinguished from other genera of Naupactini by the large body size (close to 20 mm) and the strongly transverse subtrapezoidal pronotum, having a pair of tooth-like projections directed outwards near the base (Figs. 1-4). All tibiae bear a mucro and rows of denticles on the inner margins. Metatibial apex with outer bevel present and oblique with respect to the main tibial axis. The ovipositor has styli and rows of setae on each side of the distal half.

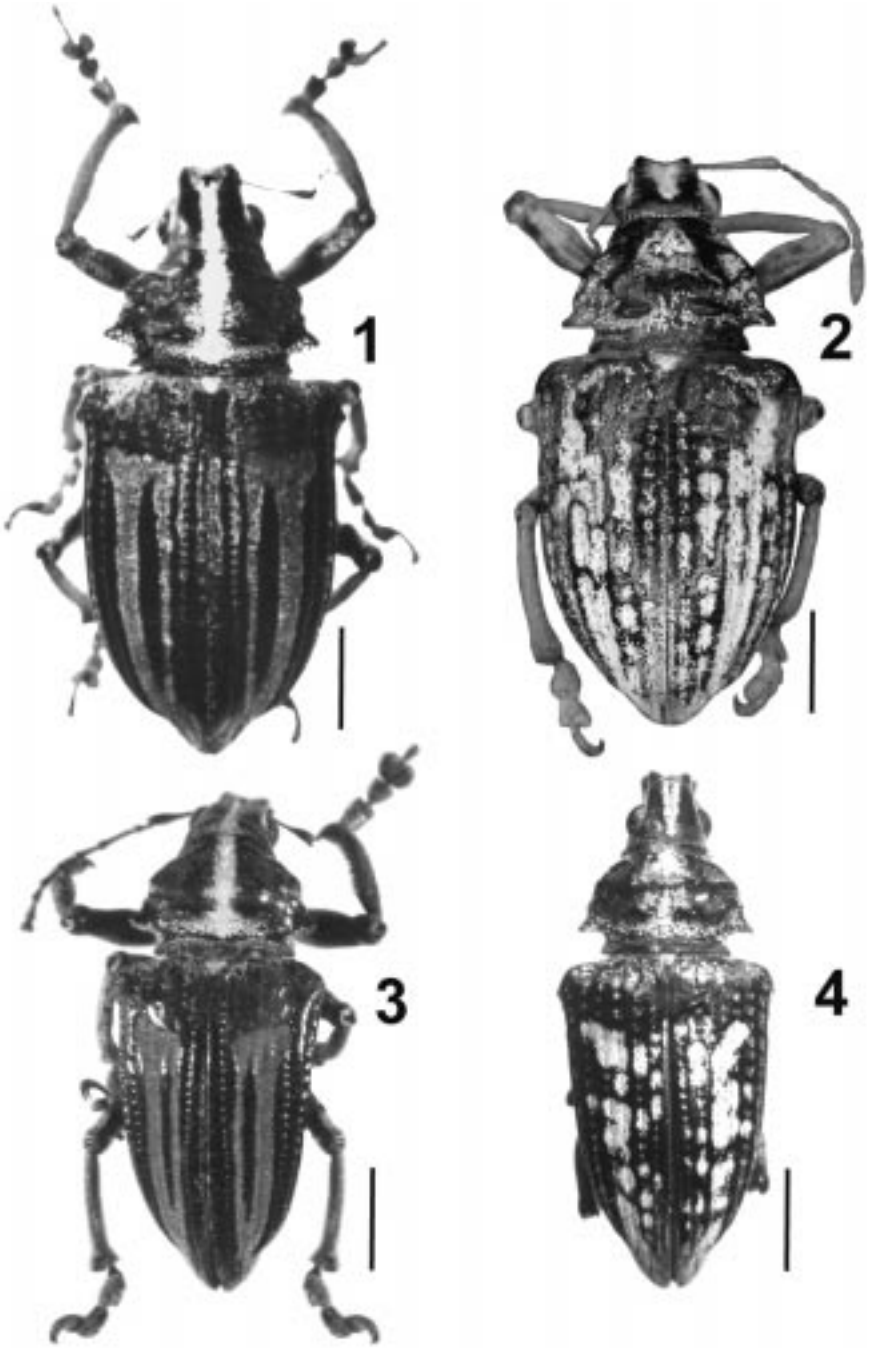
Description: Large and robust (female 17-19.5 mm long; male 15-16 mm). Integument brown to black, mostly visible. *Vestiture* of dorsum mainly composed of scales forming a longitudinal white vitta along rostrum and pronotum and pairs of ocher or white vittae along elytra; venter and inner face of femora and tibiae mostly covered with very long setae. *Rostrum* (Figs. 5-6) about as long as, to slightly longer than wide at apex (LR/WR:1-1.27), lacking lateral carinae but with slightly elevated lateral borders; rostral groove widened at apex, exceeding hind margin of eyes; scrobes slightly curved downwards, ending below eyes; epistome slightly depressed, broad and densely squamose; gular angle obtuse. Frons somewhat depressed. Vertex slightly convex. Eyes (Figs. 5-6) moderately convex; preocular impression distinct. *Mouthparts.* Prementum (Fig. 8) subcor-

date, external surface slightly concave, without setae; internal surface with a moderately developed median keel flanked by lateral depressions; palpi shorter than prementum and forming an obtuse angle with it. Maxillae (Fig. 9) with mala almost perpendicular to axis of palpus, having seven basal lacinial teeth and numerous setae; article 1 of palpi elongate, article 2 transverse and article 3 subcylindrical, apically papillate. *Antennae* (Fig. 10) very long; scape reaching hind margin of eye; funicular article 2 more than 2x as long as article 1; articles 3-5 about 3x as long as wide; articles 6-7 about 2x as long as wide; club oval to slightly fusiform (LC/WC: 2.50-3.30). *Pronotum* (Figs. 1-4) subtrapezoidal, strongly transverse (WP/LP: 1.69-1.87); anterior margin strongly thickened; disc finely punctuate, elevated regarding the anterior and posterior margins, with various transversal prominences, three pairs near midline (the posterior one crested) and two pairs near sides; flanks with a small hole placed on a distinct elevation and a strong tooth-like projection directed outwards, near base; posterior margin strongly constricted. *Scutellum* distinct, squamose. *Elytra* (Figs. 1-5) moderately elongate (LE/WE: 1.47-1.77); base slightly bisinuate; humeri largely developed; disc slightly convex, forming edges with sides at interval 7; striae distinct, with punctures medium-sized to large; intervals slightly convex; apical declivity slight, apex subacute. Metathoracic wings well developed. Legs. Front coxae slightly separated from each other; slightly closer to anterior than to posterior margin of pronotum; all tibiae with strong mucro and a row of six strong denticles on inner margin, intercalated with smaller denticles (Fig. 7); all denticles decreasing in size from front to hind tibiae; metatibial apex with broad, setose outer bevel, oblique with respect to main tibial axis; apical comb very long, dorsal comb almost indistinct. *Abdomen* (Figs. 11-12). Ventrite 2 as long as 3+4; apex of ventrite 5 subacute in female and truncate in male; tergites strongly sclerotized.

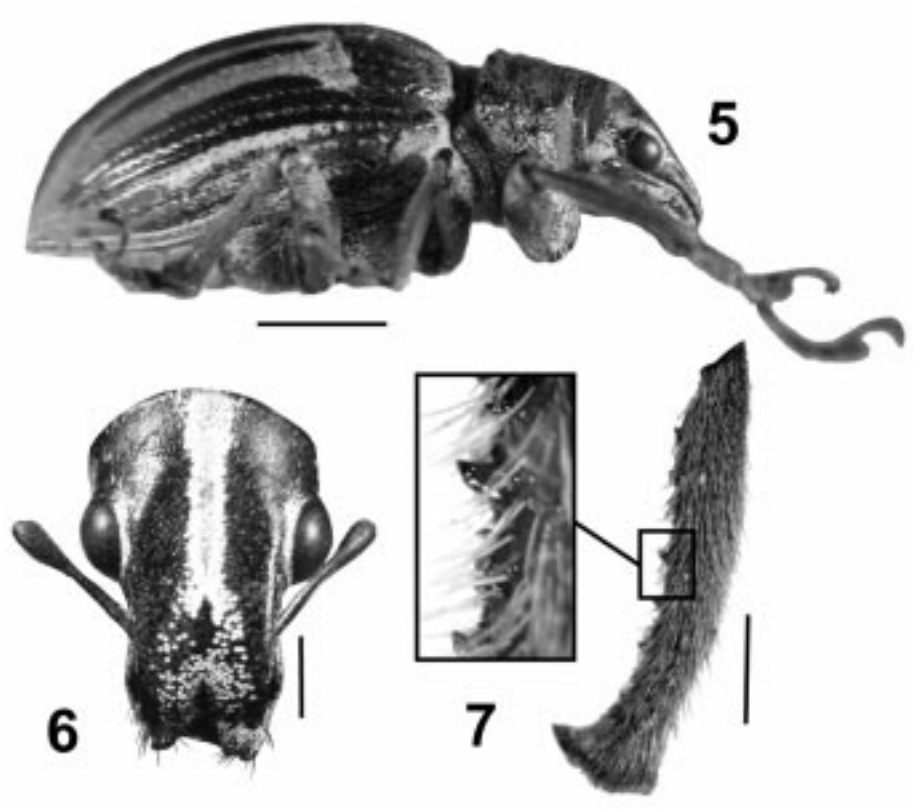
Female genitalia (Figs. 13-16). Sternite VIII (Fig. 14) subrhomboidal, with distal part shorter than proximal part, bearing minute short setae and apical tuft of long setae, base with pair of linear sclerotizations; apodeme about 3x as long as plate. Ovipositor (Fig. 13) slightly longer than abdomen, studded with microscopic oval scales and a row of long setae on each side of baculi, on distal part (Fig. 15); ventral baculi slightly divergent towards proximal end; hemisternites moderately sclerotized; styli present. Spermatheca (Fig. 16) subcylindrical with short conical nodulus, indistinct ramus and moderately long cornu.

Male genitalia (Figs. 17-18). Aedeagus (median lobe plus apodemes) slightly longer than abdomen; median lobe scarcely curved and slightly longer than its apodemes (Fig. 17); apex somewhat expanded and with a distinct point (Fig. 18); endophallus folded and with surface studded with short, pointed spines on distal half, lacking endophallic armature.

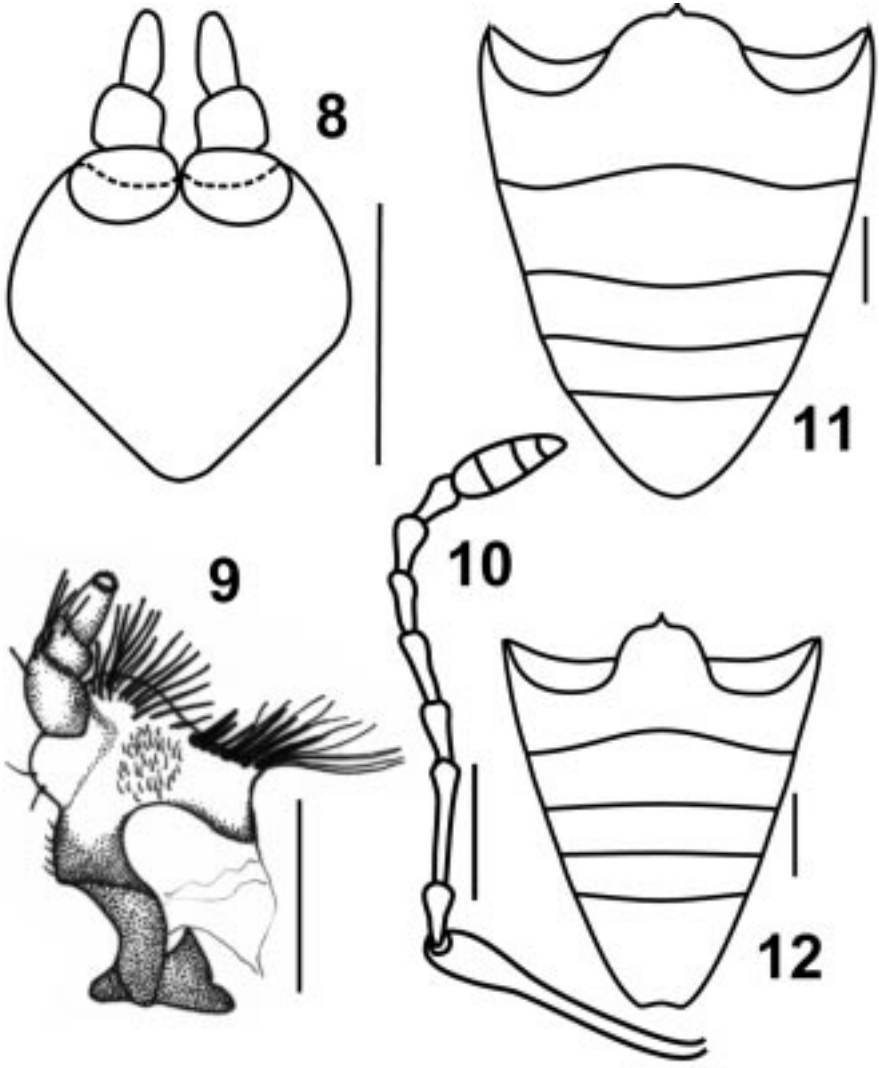
Sexual Dimorphism: Males (Figs. 3- 4) smaller than females (Figs. 1-2); rostrum slightly longer (LR/WR, female: 1-1.10; male: 1.15-1.27); pronotum less transverse (WP/LP, female: 1.76-1.87; male: 1.69-1.72); prominences of the pronotum more distinct; and elytra more slender and elongate than in females (LE/WE, female: 1.47-1.55; male: 1.70-1.77).



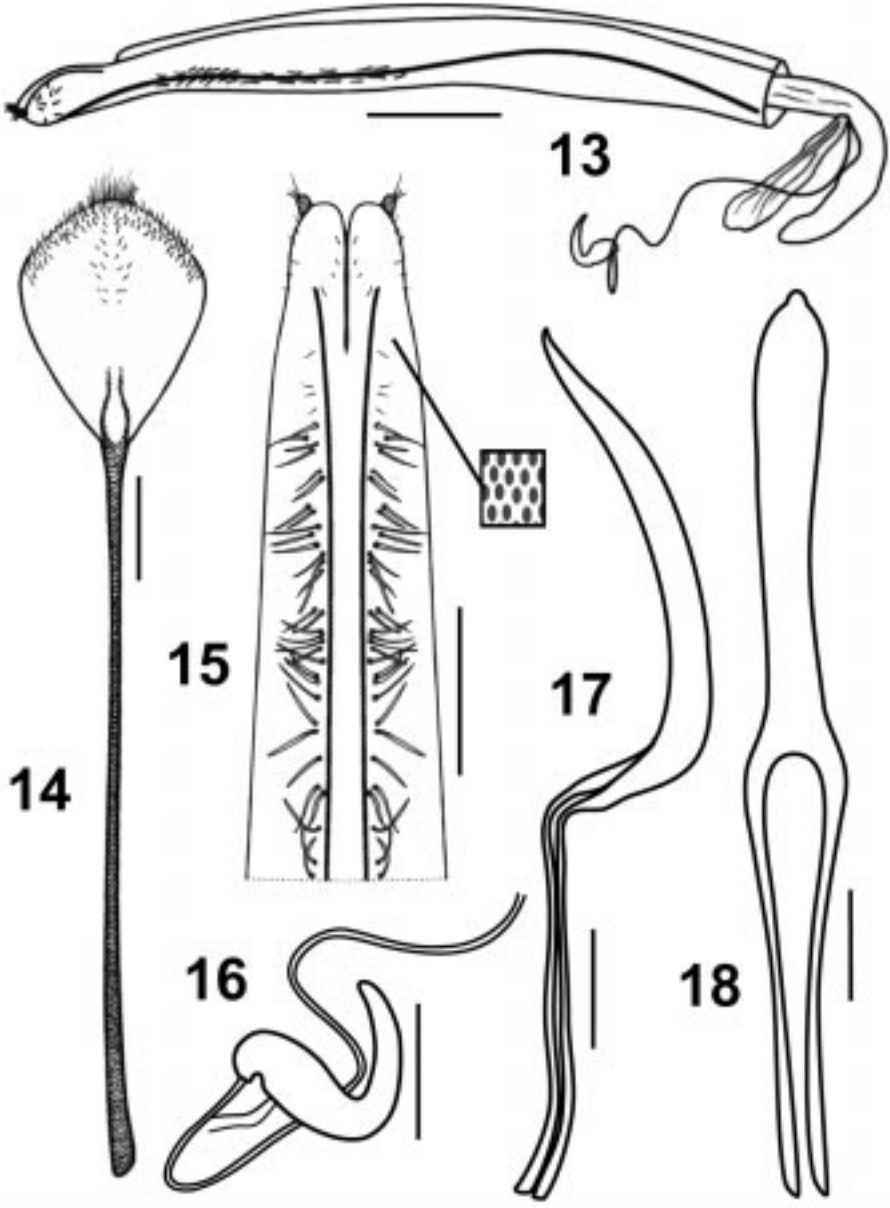
Figs 1-4. Dorsal habitus of *Thoraconaupactus vaninii*. 1 and 3 morphotype A, 1 holotype female, 3 paratype male; 2 and 4 morphotype B, 2 paratype female, 4 paratype male. Scales: 3 mm.



Figs 5-7. External morphology of *Thoraconaupactus vaninii*. 5 Habitus, lateral; 6 head and rostrum, frontal; 7 front tibia, external. Scales: 3 mm (habitus); 1 mm (rostrum and head, tibia).



Figs 8-12. Mouthparts, antenna, and abdomens of *Thoraconaupactus vaninii*. 8 prementun, external; 9 left maxilla; 10 left antenna; 11 abdomen, female; 12 abdomen, male. Scales: 0.5 mm (prementum); 1 mm (maxilla, antenna); 2 mm (abdomens).



Figs 13-18. Genitalia of *Thoraconaupactus vaninii*. 13 ovipositor, lateral, with spermatheca attached to bursa copulatrix through spermathecal duct; 14 sternite VIII; 15 ovipositor, ventral, distal half; 16 spermatheca; 17-18 aedeagus, lateral and ventral. Scales: 0.5 mm (spermatheca); 1 mm (sternite VIII, ovipositor, aedeagus).

Remarks: *Thoraconaupactus* is placed in the tribe Naupactini sensu Emden (1944). It is distinguished by a particular combination of characters and some special features not seen in other genera of Naupactini that justify the description of a new generic entity. The most diagnostic character of *Thoraconaupactus* is the strongly transverse subtrapezoidal pronotum, very constricted at the base, with tooth-like projections directed outwards on the posterior third of the sides, and with an elevated disc bearing several transverse prominences (the posterior ones crested). Other particular character of the new genus is the metatibial bevel oblique with respect to the main axis of the tibia, the very long apical comb of the metatibia, and the presence of a distinct elevation on each side of the pronotum, bearing a small hole on top (function unknown).

The most closely related genera of *Thoraconaupactus* are probably *Naupactus* Dejean and *Teratopactus* Heller. The former is a highly diversified genus mainly distributed in tropical and subtropical South America, and the latter includes seven species mainly distributed along the Chacoan and Parana subregions of the Neotropical region (del Río et al., 2006). *Thoraconaupactus* shares several characters of generic value with the typical *Naupactus* (type species *Naupactus rivulosus* Olivier) such as the shape of the rostrum, the long and slender antennae, the well developed humeri and metathoracic wings, the broad bevel of the metatibial apex, and the ovipositor bearing styli, with moderately sclerotized hemisternites (see Lanteri, 1981). The characters that relate *Thoraconaupactus* to *Teratopactus* are the separate front coxae and the presence of a row of denticles along the inner margin of the three pairs of tibiae, but *Teratopactus* is distinct by the lack of metatibial outer bevels, the presence of humeral teeth, the reduction of metathoracic wings, and the ovipositor lacking styli and with strongly sclerotized hemisternites prolonged in a nail-like process. Among all species of *Teratopactus*, the most similar to *Thoraconaupactus* is the basal *Teratopactus tuberculatus* Arrow, the only species with a primitive type of ovipositor (with styli and lacking hemisternites prolonged in a nail-like process) (del Río et al., 2006).

Moreover, the three genera share the presence of two rows of setae along the distal half of the ovipositor on each side of the ventral baculi that is a character not seen in any other genus of Naupactini.

Geographical Distribution: *Thoraconaupactus* seems to be endemic to the state of Bahia, northeastern Brazil. Its distribution corresponds to the biogeographic province of the Caatinga (American Indian language that means “open forest”), according to the schemes of Cabrera and Willink (1973) and Morrone (2006). This province of the Neotropical region is a dry savanna with scattered xerophyllous forests, bounded by the Brazilian Atlantic forest on the east side and the Cerrado on the west side. The former biogeographic province is a humid tropical forest and the latter is characterized by open xerophyllous forests with low trees, shrub and a stratum of herbs rich in Poaceae and Fabaceae, with gallery forests extended along the rivers.

Host Plants: Fabaceae are one of the main hosts for most Naupactini species and the adults of *Thoraconaupactus* were collected on *Leucaena* sp., a mimosoid

legume native to the Neotropical Region. *Leucaena* includes thirteen species that grow as trees and short shrubs, with high quality foliage attractive to herbivores (Zárate, 1994). Three of these species are recorded for Brazil, but only one, *L. leucocephala,* ranges into the state of Bahia, a fact that makes us suspect that it is probably the host plant of *Thoraconaupactus*. *Leucaena leucocephala* is widely distributed in tropical America, restricted to lowlands up to 1000 m and has been introduced as a multipurpose tree to several tropical countries (Shelton and Brewbaker, 1994).

Thoraconaupactus vaninii new species, del Rio and Lanteri

Etymology: The species is named after the outstanding weevil specialist Dr. Sergio Vanin (Museu de São Paulo, Brazil), who loaned us the material for this study. The gender of the name is masculine.

Type Material: Holotype. Female, 19.5 mm long, "F.N.P. Itaji, BA. BRAZIL, 04/06/84, E. Cunha, s/ *Leucaena*, 2290" (MZSP). Genitalia dissected and placed in a vial with glycerine Allotype. Male, 16 mm long, same data as holotype (MZSP). Genitalia dissected and placed in a vial with glycerine. Paratypes. 1 female, same data as holotype (MLPC); 1 female and 1 male, Ibiraba, BA, Brazil, Rocha & Xavier col, 1-III-1996 (MZSP).

Description: Holotype female (Fig. 1) large and robust (19.5 mm long). Integument dark brown, mostly visible. Dorsum with a white median stripe of dense oval scales, from apex of rostrum to base of pronotum; scutellum white; sides with a scarcely defined vittae from apex of rostrum to apex of elytra, passing below eyes, extended along sides of pronotum and covering intervals 8-10 (Fig. 5). Elytra with three pairs of ocher longitudinal vittae (Fig. 1), composed of suberect seta-like scales, covering depressed surfaces of stria 2, interval 4 and intervals 8-9. First and second vittae anteriorly connected by a transverse segment extended from striae 2 to 5 (Fig. 1); third vitta partially overlapped with lateral white stripe (Fig. 5). Elytral apex with disperse erect fine black setae. Legs mostly setose; coxae and femora covered with setae and moderately dense oval scales; setae on anterior face of front coxae, inner face of femora (especially fore femora) and tibiae very long and dense. Venter covered with oval scales distributed along head, sides of thoracic sterna and sides of abdomen, mixed with recumbent long setae, particularly dense along middle of ventrites. Other morphological features as those described for the genus. Morphometric ratios: rostrum LR/WR: 1.05; WF/WR: 1.31; antennal club LC/WC: 2.5; pronotum WP/LP: 1.87; elytra LE/WE: 1.55; LE/LP: 1.33. Allotype male. Smaller and more slender than female, 16 mm long. Morphometric ratios: rostrum LR/WR: 1.15; WF/WR: 1.12; antennal club (missing); pronotum WP/LP: 1.69; elytra LE/WE: 1.77; LE/LP: 1.19.

Variation: Within *T. vaninii* we distinguish two morphotypes mainly based on characters of the vestiture, color pattern and morphometrics: A) Holotype, allotype and other specimen from Itaji (Figs. 1, 3, and 5). Integument brown and

smooth. Elytral vittae well defined, composed of ocher suberect seta-like scales. Venter mostly setose; setae very long and dense; ventral scales almost restricted to head, sides of thoracic sterna and sides of abdomen. Pronotal prominences moderate. Elytra moderately elongate (LE/WE, female: 1.55, male: 1.77) B) Specimens from Ibiraba (Figs. 2 and 4). Integument black and slightly rugose. Elytral vittae not well defined, but interrupted, composed of whitish oval scales. Venter mostly squamose; setae long, moderately dense; scales covering most ventral surfaces from head to abdomen. Pronotal prominences strong. Elytra less elongate than in morphotype "A" (LE/WE, female: 1.47, male: 1.70).

We consider that the differences between the morphotypes does not justify a species distinction but corresponds to intraspecific variation. The pattern described for *T. vaninii* was also seen in other species of Naupactini, such as *Naupactus leucoloma* Boheman, *Atrichonotus taeniatulus* (Berg) and *Teratopactus nodicollis* (Boheman) (Lanteri and O' Brien, 1990; Lanteri and Marvaldi, 1995; del Río et al., 2006), all of which have two different morphotypes in some of their populations, distinguished mainly by characters of the vestiture and morphometrics. The localities where morphotypes were collected correspond to areas 600 km distant, with slightly different climate and vegetation conditions. Morphotype "A" comes from Itají (14º 10' S, 40º 00' W), 210 km NW of Salvador and 110 km from the Atlantic coast, at 600 m above sea level. This locality is on the boundary with the Brazilian Atlantic forest, which is a humid environment (tropical forest, 100 km wide, extended from the state of Recife in the north to Rio Grande do Sul in the south). Morphotype "B" comes from Ibiraba (10º 45' S, 42º 48' W), 530 km NW of Salvador and the Atlantic coast, at 400 m above sea level. This location is more distant from the coast, closer to the Cerrado biogeographic province, and drier than the locality of morphotype "A" (although it is near the banks of the San Francisco River). It is possible that the infraspecific variation herein described for *T. vaninii* is associated with the geographic distribution. This hypothesis should be tested with the study of larger samples of specimens from different localities.

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