

Papéis Avulsos de Zoologia

Museu de Zoologia da Universidade de São Paulo

Volume 49(23):289-309, 2009

www.mz.usp.br/publicacoes
www.revistasusp.sibi.usp.br
www.scielo.br/paz

ISSN impresso: 0031-1049
ISSN on-line: 1807-0205

A REVISION OF THE NEOTROPICAL SOLENOPSISINI ANT GENUS *OXYEPOECUS* SANTSCHI, 1926 (HYMENOPTERA: FORMICIDAE: MYRMICINAE). 2. FINAL. KEY FOR SPECIES AND REVISION OF THE *RASTRATUS* SPECIES-GROUP

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ABSTRACT

In the first paper of this series (Albuquerque & Brandão, 2004) we revised the Vezenyii species group of the exclusively Neotropical solenopsidine (Myrmicinae) ant genus Oxyepoecus. In this closing paper we update distribution information on the Vezenyii group species and revise the other Oxyepoecus species-group (Rastratus). We describe two species (Oxyepoecus myops n. sp. and O. rosai n. sp.) and redescribe previously known species of the group [O. daguerrei (Santschi, 1933), O. mandibularis (Emery, 1913), O. plaumanni Kempf, 1974, O. rastratus Mayr, 1887, and O. reticulatus Kempf, 1974], adding locality records and comments on the meagre biological data of these species. We also present an identification key to Oxyepoecus species based on workers.

KEYWORDS: Formicidae; Myrmicinae; Solenopsisini; *Oxyepoecus*; Revision; *Rastratus* group.

INTRODUCTION

Albuquerque & Brandão published in 2004 the first part of a revision of the exclusively Neotropical Solenopsisini ant genus *Oxyepoecus* Santschi, with a generic diagnosis, descriptions of five species and redescrptions of six species of the Vezenyii species-group. In this paper we present information on Vezenyii group specimens recently acquired by the Museu de Zoologia and revise the other *Oxyepoecus* species-group, *Rastratus*, describing two new species, and redescrbing and registering new localities for the

already five known species. We also present a new version of the key for identifying *Oxyepoecus* species based on workers.

Since Albuquerque & Brandão (2004) was published *Oxyepoecus* has been cited a few more times in the literature. Bolton (2003) recognized *Oxyepoecus* as a valid member of the *Solenopsis* genus group of Solenopsisini. The majority of the other citations refers to records in faunistic surveys: Maschwitz *et al.* (2000), Vasconcelos *et al.* (2003), Ketterl *et al.* (2003), Macedo (2004), Silva & Silvestre (2004), and Morini *et al.* (2007).

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MATERIAL AND METHODS

The main collection used in this work was that of the Museu de Zoologia da Universidade de São Paulo (MZSP); material from others sources are acknowledged in the examined material sections; after species descriptions or redescriptions we list types and locality records for each. The acronyms adopted follow Brandão (2000). All type specimens cited were examined, but for *Oxyepoecus mandibularis* and are deposited in the MZSP, unless otherwise stated. As most studied specimens belong to the MZSP, we only cite collection acronyms in the examined material sections when we deposited material there:

- AMNH: American Museum of Natural History, New York, NY, USA.
 CASC: California Academy of Sciences, San Francisco, CA, USA.
 CECL: Coleção Entomológica Angelo Moreira da Costa Lima. Instituto de Biologia, Universidade Federal Rural do Rio de Janeiro Seropédica, RJ, Brazil. Note: cited as IBUS in Brandão (2000).
 CPDC: Centro de Pesquisas do Cacau, Itabuna, BA, Brazil.
 ICNC: Instituto de Ciencias Naturales de la Universidad Nacional de Colombia, Bogotá, Colombia.
 IHVL: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Bogotá, Colombia.
 LACM: Los Angeles County Museum of Natural History, Los Angeles, CA, USA
 MIZA: Instituto de Zoología Agrícola, Facultad de Agronomía, Universidad Central de Venezuela, Maracay, Aragua, Venezuela.
 MZSP: Museu de Zoologia da Universidade de São Paulo, São Paulo, SP, Brazil.
 USNM: National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.

The terms for external morphology and surface sculpturing follow Bolton (2000), Harris (1979), Shattuck (1999), and Hölldobler & Wilson (1990). The reproductive females are called “gynes”, as suggested by de Andrade & Baroni Urbani (1999). Some authors treated ants’ head orientation (Trager, 1989; Snelling, 1989 and Wheeler, 1989), but we prefer to follow Kugler (1994) considering the mandibles as set in the anterior end of the head, and the vertexal margin in its posterior end. In the diagnosis for this

genus, Albuquerque & Brandão (2004) described the subpostpetiolar process as having an anterior and a posterior area, linked by a concave line. However, what we called the posterior area of the process corresponds in reality to the ventrally produced socket margin of the postpetiole, which is linked to the true ventral process by a concave line in lateral view. The true postpetiolar ventral process of *Oxyepoecus* females looks like a tooth in side view under the stereoscope, without noticeable notch in the middle. However, when seen in frontal view, it looks like a crest with the two divergent apices linked by a concave line.

Morphometric measures follow Kempf (1974) and Bolton (2000); measurements were obtained using micrometric reticule in a Wild M8^o stereomicroscope with ocular lens 16 X, or using the scale of a LEO 440^o scanning electron microscope microphotographs; all measures are given in mm. Abbreviations for the measurements are:

- t.l.: total length: the summed length of head length (h.l.) plus the close mandibles, mesosoma length (a.l.), longitudinal axis length of the waist (petiole and postpetiole in dorsal view), and longitudinal axis length of gaster (in dorsal view) taken separately.
 h.w.: head width: maximum width of the head capsule measured in full-face view, at the transversal line that touches the posterior margin of both compound eyes.
 h.l.: head length: the maximum measurable length of head capsule excluding mandibles, measured in full-face view, in a straight line from the mid-point of the anterior clypeal margin to the mid-point of the vertex margin, in the same view as head width.
 m.l.e.: maximum length of eyes: with the head in lateral view, through the major axis of the compound eyes, often between anterior and posterior margins.
 s.l.: antennal scape length: the chord length of the antennal scape, excluding the basal condyle and its neck.
 a.l.: mesosoma length of thorax: the diagonal length of mesosoma in lateral view, from the mid-point of the anterior pronotal declivity to the posterior basal angle of the metapleuron.
 h.f.l.: hind femur length: the chord length of the hind femur, excluding the trochanter.

- m.w.pr.: maximum width of pronotum: with the mesosoma in dorsal view, measured through the longest axis of pronotum, perpendicular to the longitudinal axis of body.
- m.w.p.: maximum width of petiole: with the mesosoma in dorsal view, measured through the longest axis of petiole, perpendicular to the longitudinal axis of body.
- m.w.pp.: maximum width of postpetiole: with the mesosoma in dorsal view, measured through the longest axis of postpetiole, perpendicular to the longitudinal axis of body.
- c.i.: cephalic index: ratio between head width (h.w.) and length (h.l.), multiplied by 100.

Others abbreviations are:

- r.g.d.: in a row across the greatest diameter.
- f.f.v.: full face view
- p.v.: profile (lateral) view
- d.v.: dorsal view

Photographs under scanning electron microscope (SEM) model LEO 440^o of the MZSP were used to diagnose and to separate *Oxyepoecus* species based on relatively very small characters. The specimens were previously cleaned, dried in a Balzer (Bal-Tec^o CPD 030) critical-point drier, and covered (Bal-Tec^o SCD 050) with gold. Afterwards specimens were mounted on stubs supported by a paper triangle that held the ant using silver glue. The images were obtained under variable magnifications (40 to 300 X) according to the size of the specimen. Beam size was not always the same (voltage between 0.5 and 20 KV; and I probe between 100 pA and 2 mA). After the images were saved, we enhanced details using Adobe Photoshop v8.0^o and Kontron^o 300, but mostly the main parameters changed were brightness and contrast.

Collection locality coordinates were elucidated from specimen labels using the National Geospatial-Intelligence Agency Geonames Server (<http://geonames.nga.mil/ggmaviewer/MainFrameSet.asp>) and Google Earth^o from Google; we present coordinates between parentheses for each locality record, plotted on the maps using the software ArcView^o.

When citing label data, we present additional information between brackets, such as explanation of label codes, misprint corrections, and reference to notebooks from which we took information regarding localities and/or biology of the species.

RESULTS

Since our revision of *Oxyepoecus* of the *Vezenyii* species group (Albuquerque & Brandão, 2004) the MZSP collection has received samples of different species from the *Vezenyii* group that either significantly extend the known geographical distribution of the species, or support our hypotheses on species identities in *Oxyepoecus*. They are:

Oxyepoecus browni Albuquerque & Brandão. Seven workers from Brazil, ES, REBIO Sooretama (19°04'21"S, 39°56'57"W), 14-15.v.2002, Schoederer, J.H. & Ribas, C.R. col. (samples # 3, 13, 20, 30, 31) (specimens from sample 3 deposited in CPDC).

Oxyepoecus bruchi Santschi. One worker from Brazil, SC, Palhoça, Pq. Est. Serra do Tabuleiro (27°44'28"S, 48°41'50"W), 02-10.vi.2003. Silva, R.R.; Dietz, B.H. & Tavares, A. col. (sample # 6). Two workers from Argentina, Tucumán, 23.xi.1953, N. Kusnezov # 9133.

Oxyepoecus crassinodus Kempf. Two workers from Brazil, PR, Tunas, Parque das Lauráceas (24°51'16"S, 48°43'00,4"W), 21-29.ii.2001, Silva & Eberhard col. (samples 04, 19). Twelve workers from Brazil, PR, Morretes, Parque Estadual do Pau-Ôco (25°34'33,5"S, 48°53'19,5"W), Silva, R.R. & Dietz, B.H. col. (samples # 32, 39, 41, 43, 48). Two workers from Brazil, RS, Floresta Nacional São Francisco de Paula (29°23-27'S, 50°23-25'W) 13.vi.2001, Schmid, F.A. col. One worker from Brazil, SP, Cunha. P.E. Serra do Mar (23°15'03"S, 45°00'26"W), 21-22.iv.2001, A. Tavares & R.R. Silva col. (sample 36).

Oxyepoecus inquilinus (Kusnezov). One worker from Brazil: SP, Botucatu ("armadilha de solo, em pastagem"), 18.i.1988, L.C. Forti col.

Oxyepoecus longicephalus Albuquerque & Brandão. One worker from Brazil, SC, São Bonifácio, P.E. Serra do Tabuleiro (27°49'06"S, 48°54'41"W), 08-13.iii.2004, Silva, R.R.; Dietz, B.H. & Albuquerque, N.L. col. (sample 33).

Oxyepoecus punctifrons Borgmeier. Three workers from Brazil, RS, Sapiranga, Morro Alto do Ferrabráz (29°34'45,8"S, 50°56'76,2"W), 15.iv.2005, Fabiana Haubert & Elena Diehl col. Four workers from Brazil, SC, São Bonifácio, P.E. Serra do Tabuleiro (27°49'06"S, 48°54'41"W), 08-13.iii.2004, Silva, R.R.; Dietz, B.H. & Albuquerque, N.L. col. One

worker from Brazil, SC, São Brazil, SC, S. Bento do Sul, APA Rio Vermelho (26°21'51"S, 49°16'16"W), 30.iii-04.iv.2001, Silva, R.R. & Eberhard, F. col. One worker from Brazil, SP, Tapirai (24°01'55"S, 47°27'56"W), 08-14.i.2001, Silva & Eberhard col. (sample 10).

Oxyepoecus vezenyii (Forel). One gyne from Brazil: SP, Botucatu ("armadilha de solo, em pastagem"), 09.i.1987, L.C. Forti col. One worker from Brazil, SP, Cunha. P.E. Serra do Mar. Núcleo Cunha-Indaia (23°15'03"S, 45°00'26"W), 21-22.iv.2001, A. Tavares & R.R. Silva col. (sample 4).

Key for the identification of *Oxyepoecus* workers

1. Cephalic dorsum mostly smooth and shining; sculpture, if present, confined to anterior portions of genae and between the frontal carinae, where the costulae may prolong caudad into two patches always separated by a smooth median frontal stripe (*Vezenyii* Species-Group).....2
- 1'. Cephalic dorsum either entirely sculptured, or if partially smooth, at least the median frontal stripe is covered by microsculpture (*Rastratus* Species-Group) 11
2. Mesosoma with irregular reticulate sculpture (better seen over 80X magnifications); head clearly longer than wide, (c.i. 70)..... *O. longicephalus*
- 2'. Mesosoma lacking irregular reticulate sculpture; head clearly wider than long, (c.i. > 70).....3
3. Compound eye with more than 7 ommatidia across greatest diameter, total number of ommatidia more than 304
- 3'. Compound eye with less than 7 ommatidia across greatest diameter, total number of ommatidia less than 305
4. Petiole antero-posteriorly compressed in a scale-like fashion, pronotum convex and rounded above, whole propodeum and metapleura with well marked costulae6
- 4'. Petiole not antero-posteriorly compressed but club shaped, integument almost entirely smooth and shining..... *O. punctifrons*
5. Propodeum saddle shaped; posterior margin of katepisternum and posterior face of the postpetiole smooth and shining..... *O. ephippiatus*
- 5'. Propodeum dorsum at the same level of mesonotum, as in other species in the genus; posterior end of katepisternum and posterior face of postpetiole longitudinally costulate..... *O. inquilinus*
6. Antero-lateral margin of the pronotum in dorsal view rounded.....7
- 6'. Antero-lateral margin of the pronotum in dorsal view angulated.....8
7. Metanotal groove not impressed (p.v.), overall size minute, the smallest of the *Vezenyii* species-group (1.7 mm) *O. kempfi*
- 7'. Metanotal groove impressed (p.v.), overall size median in comparison with others species to the *Vezenyii* species-group (2.7 mm)..... *O. crassinodus*
8. Antero-lateral margin of the pronotum in dorsal view rounded, not forming an angle *O. vezenyii*
- 8'. Antero-lateral margin of the pronotum in dorsal view forming an angle9
9. Pronotal disk without costulae; subpostpetiolar process very much ventrally projecting, surpassing the level of the postpetiolar socket..... *O. bruchi*
- 9'. Pronotal disk with costulae; subpostpetiolar process not much ventrally projecting, attaining at most the level of the postpetiolar socket.....10
10. Dorsal margin of the petiole in lateral view rounded; length of the declivous margin of the propodeum less than half of the basal margin length *O. brouni*
- 10'. Dorsal margin of the petiole subquadrate; length of the declivous margin of the propodeum more than half the basal length *O. quadratus*
11. At least the posterior third of the pronotal lateral face covered by sculpture; katepisternum and metapleuron mostly covered by reticulations 12
- 11'. Posterior third of pronotal lateral face mostly smooth (faint rugae covering at most the mesothoracic spiracle in *O. rastratus*); katepisternum and metapleuron mostly covered by longitudinal costulae 14
12. Mesosoma and petiole dorsum entirely reticulate (Fig. 1b). Tiny compound eye with three ommatidia r.g.d. and circa five in all (Fig. 1a) *O. myops* n. sp.

- 12'. Mesosoma and petiole node dorsum either smooth or covered by different sculpturing. Compound eye with more than 6 ommatidia.13
- 13. Head dorsum laterally and at vertex mostly smooth, costulae confined to median cephalic dorsum (Fig. 5a), sculpture on lateral pronotal face mostly effaced; katapisternum and metapleuron covered by reticulations only (Fig. 5b)..... *O. rosai* n. sp.
- 13'. Head dorsum and vertex completely sculptured (Fig. 4a); lateral face of pronotum longitudinally costulate (sometimes reticulate), katapisternum and metapleuron irregularly reticulate and punctate, coarser on metapleuron.....*O. reticulatus*
- 14. Costulae on head dorsum prolonged caudad but not attaining posteriorly the vertex margin (Fig. 2a)
..... *O. plaumanni*
- 14'. Costulae on head dorsum prolonged caudad and attaining posteriorly the vertex margin.....15
- 15. Costulae on head dorsum prolonged laterally and do not reaching posterad of compound eye...*O. daguerrei*
- 15'. Costulae on head dorsum prolonged laterally and reaching posterad of compound eye (Fig. 3a).....
..... *O. rastratus*

Rastratus Group – diagnosis

The species included in the *Rastratus* group are characterized by the cephalic dorsum entirely costulate or, in the case the sculpture covers only partially the head dorsum, the area between the frontal carinae is always sculptured, while in species of the *Vezenyii* group this area is always smooth. To name the species group we use the oldest published specific name.

Description of *Rastratus* group *Oxyepoecus* workers

Color: varies from reddish-yellow to almost black; mandible, antennal club and scape, and yellowish legs are usually lighter than other body parts. The integument can be almost totally smooth and shining when observed under the stereomicroscope; when the integument presents microsculpture it appears as short or long, straight, curved or undulate costulae (sometimes set in a net, called then irregularly reticulate), straight or curved rugae, striae (thinner than rugae), and piligerous punctuations. The longitudinal costulae between the frontal carinae, when present, surpass the level of a virtual line that crosses the superior margins of the compound eyes (referred from now on as the level of the superior margins of the compound eyes; we adopt the same terminology for the inferior margins), and can reach posteriorly the vertex margin; laterally the costulae can reach the margin above the compound eyes. The hairs can appear as background pubescence or individually, decumbent to erect; generally the antennal club presents a fine pubescence, while the coxae, tarsomeres and gaster are smooth and free of pubescence. The head vertexal margin in frontal view can be straight, gently convex, or present a small central concavity. Mandible subtriangular,

ranging from elongate to short. Posterior region of the frontal carinae, posterior to the antennal sockets, sub-parallel or convex, externally with a posterior constriction (f.f.v.); the maximum width between their outer edges (always taken in the midlength of the carinae) ranges from one fifth to one third of the head width. The compound eyes have as few as 3 facets r.g.d. and as many as 10 r.g.d. The total number of ommatidia ranges from 5-6 to 30; the greatest diameter can be equal or shorter than the virtual straight line linking the anterior margin of the compound eye and the mandibular insertion, (oculomalar distance). The anterodorsal corner of the pronotum (called hereafter shoulders) can be gently marked, as an angle between the superior and the lateral surfaces, or rounded. The metanotal groove is visible or not at all perceptible. The basal face of the propodeum is smooth or presents transversal costulae. The declivous face of the propodeum is smooth or presents some oblique rugae or striae, and may present a margin separating the posterior and lateral faces. The peduncle of the petiole can be relatively long; in dorsal view, the petiolar node width can be almost the double of the peduncle width. The postpetiole can be as high as the petiolar node (p.v.), and its width can be equal to or greater than that of the petiolar node (d.v.).

The *Rastratus* group includes the following species:

- *Oxyepoecus daguerrei* (Santschi, 1933);
- *Oxyepoecus mandibularis* (Emery, 1913);
- *Oxyepoecus myops* n. sp.;
- *Oxyepoecus plaumanni* Kempf, 1974;
- *Oxyepoecus rastratus* (Mayr, 1887);
- *Oxyepoecus reticulatus* Kempf, 1974;
- *Oxyepoecus rosai* n. sp.

Taxonomic account of the *Rastratus* group

Oxyepoecus daguerrei (Santschi, 1933) (Fig. 6)

Martia daguerrei Santschi, 1933:111 (♀ from Argentina, Buenos Aires: Rosas F.C. Sur); Kusnezov, 1952:717-8, 720 (biology; key to Argentine species).

Oxyepoecus daguerrei: Ettershank, 1966:146 (transfer to *Oxyepoecus*); Kempf, 1972:173 (catalogue); Kempf, 1974:486; Figs. 05, 16 and 22 (worker redescription and lectotype designation); Bolton, 1995:301 (catalogue).

Worker (Lectotype): t.l. = 2.60; h.l. = 0.63; h.w. = 0.52; s.l. = 0.40; m.l.e. = 0.12; m.w.pr. = 0.36; a.l. = 0.72; h.fl. = 0.45; m.w.p. = 0.17; m.w.pp. = 0.23; c.i. 83. Body color fuscous brown, mandibles and legs reddish brown. Integument smooth and shining, except frontal carinae with longitudinal costulae, prolonged caudad to vertexal margin, laterally not reaching posterad of compound eye; genae with short longitudinal rugae that reach anterior margin of clypeus close to mandibular insertion; postero-lateral corner of the pronotum dorsum longitudinally costulate that do not reach the anterior margin; side of pronotum smooth and shining; katapisternum, anepisternum, side of propodeum and metapleuron longitudinally costulate; posterior face of postpetiole with some superficial and irregular rugae. Hairs moderately abundant, short, subdecumbent and decumbent on head dorsum; most hairs on cephalic dorsum inclined mesad, anteriorly curved on the sides, decumbent on the mandibles; mesosoma dorsal hairs suberect and erect, a little longer than head hairs, with some anterior oriented; petiolar node with some suberect and posterior oriented hairs, postpetiole with very scarce hairs; numerous decumbent hairs present on gaster.

Mandible with basal border approximately equal chewing border, with broad and gently deep excision between basal and subbasal tooth. Anterior tooth of clypeus with lateral, almost indistinct, blunt denticle. Frontal carinae diverging posterad, maximum width between their outer edges about one fourth of head width. Compound eye small, with about 6-7 facets r.g.d., maximum diameter of compound eye smaller than oculo-malar distance: total number of ommatidia less than 25, circa 20. Antennal scape fails to reach vertexal margin by not more than maximum scape width. Funnicular segment I as long as II-IV combined, segments II-VII distinctly broader than long, VIII as long as broad. Head with vertexal margin slightly convex (f.f.v.).

Mesosoma (p.v.) not forming an angle between dorsal and lateral surfaces of pronotum. Metanotal groove shallow to absent (p.v.), perceptible by difference in level of propodeum relative to promesonotal dorsum level. Basal face of propodeum round on side posteriorly with two small, obliquely oriented teeth. Declivous face laterally carinate.

Petiole pedunculate, node antero-posteriorly not much compressed, nearly 2/3 as broad as postpetiole (d.v.); subpetiolar process mostly straight, anteriorly ending as a blunt and relatively small denticle (p.v.). Subpostpetiolar process subparallel to the ventrally projecting posterior socket.

Examined material: ARGENTINA: Rosas, F.C. Sur, Buenos Aires Province, Juan B. Daguerre # 1904 [35°57'S, 58°56'W] (1 ♀ lectotype, originally mounted on same pin with *Solenopsis metanotalis* var. *picturata* Santschi).

Comments: The exclusive character of *O. daguerrei* workers in relation to all other species in the genus is the straight costulae on the frontal carinae that prolong caudad, attaining the vertexal margin but failing to laterally reach the compound eye, also the postpetiole (d.v.) is relatively narrower than of others species of the genus (Kempf, 1974: Figs. 05, 16 and 22).

Only three specimens of *O. daguerrei* are known, all collected in the same locality in Argentina (Fig. 6), by Juan B. Daguerre. Santschi received them already mounted on the same pin with a worker of *Solenopsis metanotalis* var. *picturata* Santschi (# 1904, lectotype) and with a worker of *Solenopsis tetracantha* Emery (# 666). This association led Santschi to infer a close relationship between the mentioned species and *Solenopsis*. Note: we were not able to ascertain to which collection the code number in the types label refers to.

Oxyepoecus mandibularis (Emery, 1913)

Monomorium (*Martia*) *mandibulare* Emery, 1913:261-262 Fig. 12 (♀ from Bolivia: Songo); Emery, 1922:183. Borgmeier, 1928:65 (key).

Martia mandibularis: Kusnezov, 1952:722.

Oxyepoecus mandibularis: Ettershank, 1966:146 (transfer to *Oxyepoecus*); Kempf, 1972:173 (catalogue); Kempf, 1974:491-492 (revision). Bolton, 1995:309 (catalogue).

This species is known only from the worker holotype, probably deposited in Emery's collection in

Genoa. This specimen was not examined by us, but several characters mentioned in the original description distinguish *O. mandibularis* from all other species in the genus and species group. We thus reproduce Emery's original description.

“Ouvrière. Brun ferrugineux, membres plus clairs, tête, excepté les mandibules, et segment basal du gastre brun noirâtre. Tête mate, très finement réticulée, sur le front, le réticule se résout en fines stries et, sur les joues, le fond se montre luisant; épistome et mandibules luisants; corselet strié, les promésonotum en long, mais assez irrégulièrement, l'épinotum transversalement et régulièrement. Poils longs et fins, pubescence presque nulle.

*La tête est de peu plus longue que large, si on ne compte pas la saillie que forme l'épistome avec ses dents; mais si on en tient compte, la tête est alors presque une fois et demie aussi longue que large. Les mandibules sont longues et armées de 4 grandes dents dont le basal est épaissi et séparée des autres. L'épistome est bicaréné et armé, comme dans *M. vezenyii* et *M. rastratum*. Le scape atteint presque le bord occipital; massue de 3 articles, le dernier plus long que les deux autres, ceux-ci presque égaux. Pas de suture promésonotale, le profil du corselet n'est presque pas impressionné dans la suture mésoépinotale; l'épinotum a la face descendante beaucoup plus courte que la face basale; cette dernière est droite, presque verticale, bordée d'une arrête sur les côtés, qui se termine en haut par une petite saillie mousse. Vu par-dessus, le pétiole paraît claviforme; de profil il est pédonculé et surmonté d'un nœud près de deux fois aussi haut que long; par-dessus, le nœud est un peu plus large que long; postpétiole ovale, à peine de moitié plus large que le nœud du pétiole – *L. 3 mill*”.*

Comments: The characters that better distinguish *O. mandibularis* from other species in the genus are the workers' relatively large overall size (3 mm) and the sculpture pattern on the head dorsum, promesonotum, and propodeum. However this species runs with *O. rastratus* in the identification key, but can be distinguished from it by the longer median tooth and the shorter lateral tooth in *O. mandibularis*.

***Oxyepoecus myops* n. sp.**
(Figs. 1a-c, 6)

Oxyepoecus myops n. sp. Albuquerque & Brandão. Holotype: worker. Brazil: São Paulo: Salesópolis [23°39'S, 45°53'W], 05-07.vii.1997, C.I. Yamamoto col., extracted from the leaf litter using Winkler extractor; deposited in MZSP.

Paratypes (all from Brazil): São Paulo: thirty workers and three gynes from Salesópolis (same locality of the Holotype, but collected in different dates and by different collectors), deposited in MZSP, one worker deposited in AMNH, one worker deposited in CASC, one worker deposited in CECL, one worker deposited in CPDC, one worker deposited in ICNC, one worker deposited in LACM, one worker deposited in MIZA, one worker deposited in USNM.

Etymology: The specific name refers to the relatively minute size of the compound eyes that characterize workers of this species.

Worker (Holotype and paratypes (N = 30), variation within brackets): t.l. = 2.08 (1.95-2.15); h.l. = 0.53 (0.50-0.53); h.w. = 0.40 (0.38-0.43); s.l. = 0.30 (0.28-0.31); m.l.e. = 0.06 (0.05-0.08); m.w.pr. = 0.25 (0.23-0.28); a.l. = 0.60 (0.58-0.60); h.f.l. = 0.33 (0.28-0.33); m.w.p. = 0.15 (0.13-0.18); m.w.pp. = 0.20 (0.18-0.20); c.i. 75 (76-81). Color chestnut brown, legs and antennae slightly lighter. Integument with irregularly reticulate sculpture covering almost all head dorsum, except close to clypeus, and around antennal insertions; almost all mesosoma, petiole dorsum and postpetiole with irregularly reticulate sculpture; gaster smooth and shining. Hairs relatively abundant, short, subdecumbent and curved mesad on head dorsum, and anteriorly curved on the head sides; long and suberect on dorsum of mesosoma, petiole and postpetiole; hairs on gaster decumbent and shorter.

Mandible with basal border approximately equal chewing border, basal tooth separated from subbasal tooth by shallow diastema. Anterior tooth of clypeus with lateral, blunt denticle. Frontal carinae short, subparallel, with posterior end at level of anterior margin of compound eye, maximum width between their outer edges less than one fourth of head width. Compound eye very small, with 3-4 facets r.g.d.; total number of ommatidia not exceeding 7. Antennal scape fails to reach vertexal margin by distance greater than maximum scape width. Funicular segment I longer than either VIII or IX, as long as II-V combined, segments II-VII distinctly broader than long, VIII and IX as long as broad. Head with vertexal margin straight (f.f.v.).

Mesosoma with lateral and dorsal surfaces of pronotum not forming a well marked angle, slightly rounded. Metanotal groove weakly impressed (p.v.). Basal face of propodeum immarginate on sides, posteriorly with a small and obliquely directed tooth (p.v.). Declivous face laterally weakly carinate.

Petiole pedunculate, node scarcely compressed antero-posteriorly (d.v.); subpetiolar process with anterior end as a small and obliquely oriented denticle. Postpetiole strongly compressed antero-posteriorly, not as high as petiolar node; subpostpetiolar process

shaped as small, transversal crest, parallel to ventrally produced posterior socket of postpetiole.

Gyne (variation of three paratype gynes): t.l. = (2.53-2.58); h.l. = (0.55-0.56); h.w. = (0.45-0.48);

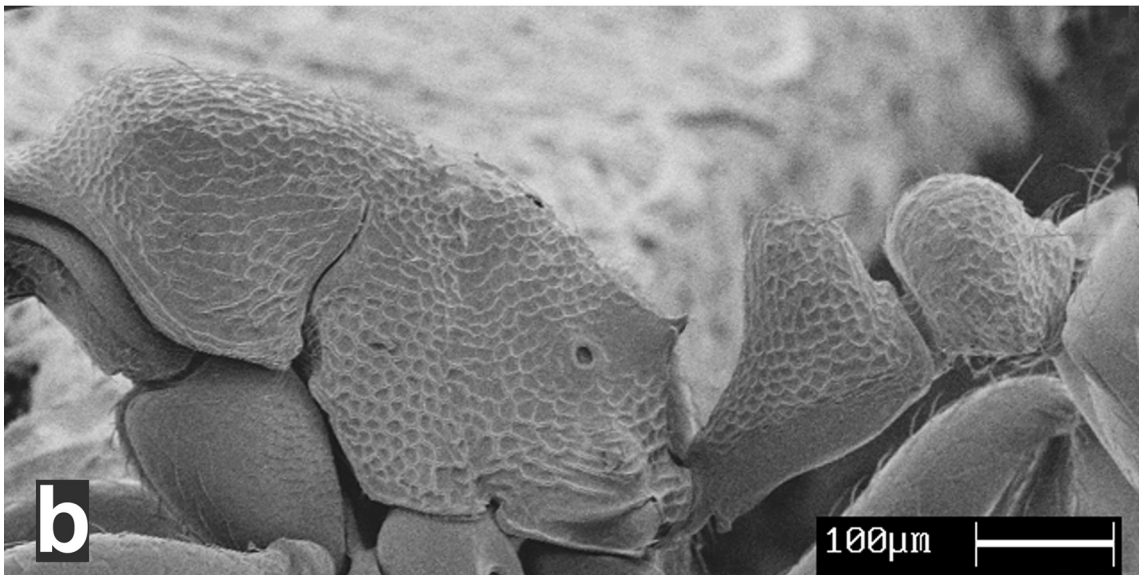
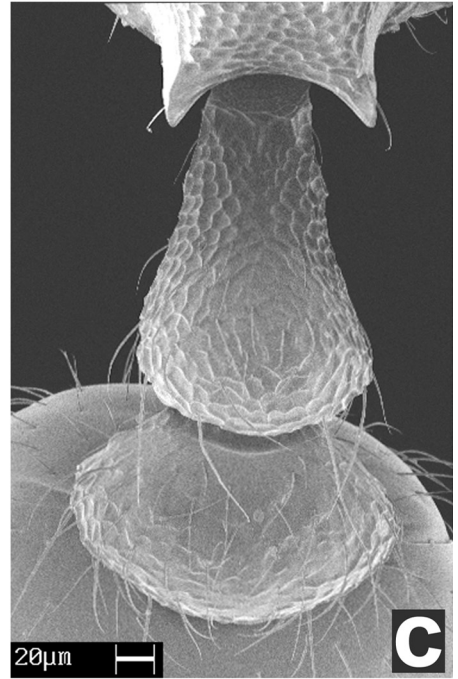
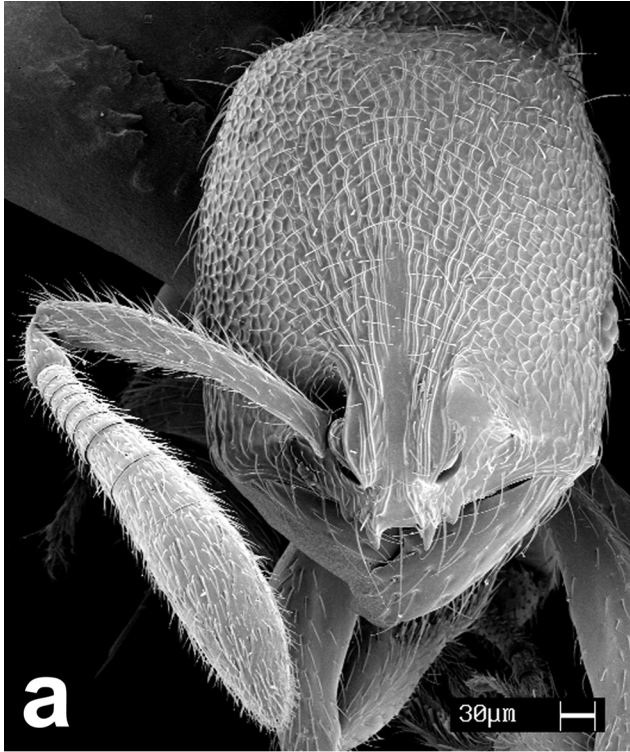


FIGURE 1: Scanning electron micrograph of the workers of *O. myops* n. sp.; a) head in full-face view; b) mesosoma in profile view; c) Petiole and postpetiole in dorsal view.

s.l. = (0.33-0.35); m.l.e. = (0.20-0.25); m.w.pr. = (0.43-0.45); a.l. = (0.70-0.73); h.f.l. = (0.38-0.40); m.w.p. = (0.18-0.20); m.w.pp. = (0.28-0.30); c.i. (81-86). Characters almost the same as workers, with the differences of the caste: the three ocelli with same diameter, approximately equal to minimum scape width, compound eye with 10 facets r.g.d., about 30 in all, scutellum not marginate.

Male: unknown.

Examined material: BRAZIL: Minas Gerais, Conceição do Mato Dentro, Serra da Serpentina, 18-28.iii.2009, Silva R.R. 067589/7894569 WGS 84 (1 ♀); Paraná: Tunas, Parque das Lauráceas, 21-29.ii.2001, [R.R.] Silva and [F.] Eberhardt cols., transecto 1 Winkler 16 [24°51'S, 48°43'W] (1 ♀); Rio de Janeiro: Santa Maria Madalena, P[arque] E[stadual] do Desengano, x.2002, Mayhé, A. & Veiga-Ferreira, S. cols., # 48 and # 17 [21°58'S, 41°57'W] (2 ♀); Nova Iguaçu, Re[serva] Bio[lógica] do Tinguá, ii.2002, Mayhé, A. & Veiga-Ferreira, S. cols., # 48 A10 [22°34'S, 43°24'W] (1 ♀); Teresópolis, P[arque] N[acional] da S[erra] dos O[rgãos], 23-27.xi.1999, Rocha [R.P.], Dietz [B.H.], Silva [R.R.] cols., # 03 [22°27'S, 42°59'W] (1 ♀); Santa Catarina: Blumenau, P[arque] E[stadual] das Nascentes, 20-27.x.2000, Silva, R.R. and Eberhardt, F. cols., [27°06'S, 49°09'W] (1 ♀); São Bonifácio, P[arque] E[stadual] Serra do Tabuleiro, 08-13.iii.2004, Silva, R.R.; Dietz, B.H. and Albuquerque, N.L. cols., [27°49'S, 48°54'W] (7 ♀, 1 ♀); Seara, v-xii.1998, Rogério R. Silva col. 24°07'S, 52°18'W (1 ♀); same locality, vi-vii.1999, same collector (7 ♀); São Paulo: Botucatu, 07.x.1987, Forti, L.C. and Rinaldi, I.M.P. cols [22°53'S, 48°26'W] (5 ♀ – soil trap collected); Campos do Jordão, xi.1985, C.G. Froelich col. [22°44'S, 45°34'W] (2 ♀); Juquitiba, 30.x.1960, W.W. Kempf col. [23°56'S, 47°02'W] (1 ♀); São Paulo, P[arque] E[stadual] da Cantareira – Núcleo Engordador, 12-22.v.2003, R. Feitosa & A. Soliva cols. 23°21'S, 46°29'W (2 ♀); Salesópolis, 03-05.v.1996, Brandão [C.R.F.]; Agosti [D.]; Diniz [J.]; Silvestre, [R.]; Yamamoto [C.I.] [cols.] [23°39'S, 45°53'W] (4 ♀ and 2 ♀); same locality, 02-06.v.1997, D. Agosti; C.R.F. Brandão; & C.I. Yamamoto cols (15 ♀); same locality, 05-07.vii.1997, C.I. Yamamoto col. (5 ♀); same locality, 05-07.ix.1997, C.I. Yamamoto, col. (4 ♀); Tapiraí, 08-14.i.2001, Silva, R.R. and Eberhardt, F. cols., [24°01'S, 47°27'W] (1 ♀) Cunha, P[arque] E[stadual] Serra do Mar (23°15'03"S, 45°00'26"W), 21-22.iv.2001, A. Tavares & R.R. Silva (samples # 5, 15, 28, 36, 38, 48, 50).(3 ♀ and 8 ♀).

Comments: The exclusive character of *Oxyepoecus myops* n. sp. workers in relation to the other species of the Rastratus group is the irregularly reticulate sculpture fully covering the head dorsum and almost all the mesosoma dorsum. Their compound eyes are the smallest in the genus.

The distribution of *O. myops* n. sp. includes several Southern Brazil localities, and in Minas Gerais, São Paulo and Rio de Janeiro States. Workers of this species have been recently extracted from litter samples taken in localities at sea level and up to more than 1000 m high in the Serra do Mar Range. Most localities are covered by dense evergreen tropical forests, but in some cases, samples come from drier forests as well, as in Seara, SC and Teresópolis, RJ. In Serra da Cantareira, SP, workers were attracted to sardine baits set on the forest floor during the day.

Oxyepoecus plaumanni Kempf, 1974
(Figs. 2a-c, 7)

Oxyepoecus plaumanni Kempf, 1974:492 (worker and gyne descriptions); Bolton, 1995:301 (catalogue).

Worker (Holotype and individuals from several localities, N = 30): t.l. = 2.10 (1.90-2.20); h.l. = 0.53 (0.48-0.55); h.w. = 0.43 (0.39-0.43); s.l. = 0.33 (0.31-0.33); m.l.e. = 0.07 (0.06-0.08); m.w.pr. = 0.31 (0.27-0.31); a.l. = 0.61 (0.55-0.61); h.f.l. = 0.36 (0.35-0.37); m.w.p. = 0.14 (0.12-0.14); m.w.pp. = 0.18 (0.16-0.18); c.i. 80 (77-81). Color chestnut brown. Integument smooth and shining, except longitudinal costulae between frontal carinae extending posteriorly almost to vertex, and laterally almost to eye; genae with few longitudinal rugae, none reaching the anterior eye margin, nor mandibular insertion; posterior third of pronotum disc and all mesonotum longitudinally costulate; mesopleuron longitudinally costulate, varying in degree of distinctness from well formed to almost effaced; basal face of the propodeum with transversal and shallow costulae barely attaining the spiracle laterally. Hairs moderately abundant, some long and erect; numerous subdecumbent or decumbent, curving mesad on cephalic dorsum, directed anteriorly on genae; erect and suberect on mesosomal dorsum; gastral hairs pointing posteriorly.

Head in Fig. 2a (f.f.v.): Mandible with basal border approximately equal chewing border, lacking broad diastema nor deep cleft between basal and subbasal teeth. Anterior apron of clypeus with prominent and

laterally pointed denticle. Frontal carinae subparallel, extending to level of posterior margin of compound eye; maximum width between their outer edges approximately one fourth head width. Compound eye length almost equal to ocularmalar distance, with about 5-6 facets r.g.d.: less than 20 ommatidia. Scape fails to reach vertexal corner by distance greater than

maximum scape width. Funnicular segment I as long as II-V combined, segments II-VII distinctly broader than long, VIII and IX as long as broad. Vertexal margin slightly concave.

Mesosoma in Fig. 2b (p.v.). Antero-dorsal corner of pronotum not carinate, transition between dorsal and lateral faces of the pronotum rounded. Metanotal

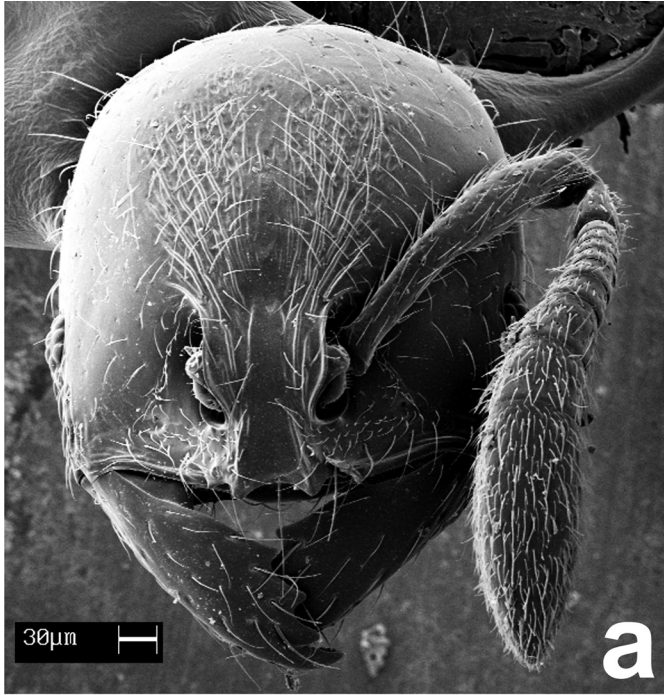


FIGURE 2: Scanning electron micrograph of the workers of *O. plaumanni*; a) head in full-face view; b) mesosoma in profile view; c) Petiole and postpetiole in dorsal view.

groove not impressed (p.v.); dorsal profile of mesosoma continuous. Propodeum with basal face laterally immarginate; at meeting of basal and declivous faces one obliquely oriented (almost upward) tooth, which length subequal the half distance between its apex and the propodeal spiracle. Declivous face laterally weakly carinate.

Petiole in Figs. 2b-c, node twice higher than long profile round, not compressed anteroposteriorly, nor laterally expanded, approximately half the width of the postpetiole (d.v.); subpetiolar process shaped as anterior blunt plate (p.v.); postpetiole very broad, anteroposteriorly compressed, subpostpetiolar process ventrally projects as posterior socket of the postpetiole.

Gyne: t.l. = 2.60-2.70; h.l. = 0.56-0.60; h.w. = 0.45-0.47; s.l. = 0.35-0.37; m.l.e. = 0.12; m.w.pr. = 0.40-0.41; a.l. = 0.75-0.78; h.f.l. = 0.40-0.43; c.i. 79-83. Color and pilosity as in worker. Sculpture on head as in worker. Pronotal dorsum with few very fine longitudinal costulae, which become more prominent laterally. Scutum smooth; scutellum longitudinally costulate; mesopleuron with very weak, almost indistinct, slightly oblique costulae; sides of metapleuron and propodeum costulate; costulae longitudinal ventrally, posteriorly oblique and curving dorsally. Sides of petiolar peduncle punctate posteriorly, otherwise smooth and shining. Three ocelli equal in size, diameter equal to minimum scape width. Fore wing with open radial cell (Rs not attaining the anterior margin), very small discoidal cell; free abscissa of M entirely lacking at apical field. Remaining characters as in worker.

Male: unknown.

Examined material: BRAZIL: Paraná: Porto Vitória (26°10'S, 51°12'W), x.1959, 700 m, Plaumann, F. col., W.W.K. # 3209 (1 ♀ paratype); Rio Azul [25°46'S, 50°41'W], x.1959, 1000 m, Plaumann, F. col., W.W.K. # 3189 (3 ♀ paratypes); Tunas, Parque das Lauráceas (24°51'S, 48°43'W), 21-29.ii.2001, [R.R.] Silva and [F.] Eberhardt cols., transecto 1 Winklers 05, 10 and 19 (4 ♀); Rio Grande do Sul: Barão de Cotegipe [27°38'S, 52°15'W], vii.1960, Plaumann, F. col., W.W.K. # 3765 (1 ♀ paratype); Boqueirão [29°30'S, 53°52'W], ix.1960, Plaumann col., W.W.K. # 3611 (1 ♀ paratype); Erexim [27°38'S, 52°16'W], vii.1960, Plaumann, F. col., W.W.K. # 8097 (1 ♀ holotype and 11 ♀ paratypes); São Francisco de Paula, Floresta Nacional de São Francisco de Paula (29°23'S, 50°25'W), 03.vii.2002, Schmidt, F.A. col. (1 ♀); Santa Catarina: Blumenau [27°06'S, 49°09'W], P[arque]

E[stadual] das Nascentes, 20-27.x.2000, Silva, R.R. and Eberhardt, F. cols., (2 ♀); Chapecó [27°06'S, 52°37'W], viii.1960, Plaumann, F. col., W.W.K. # 8331, 9883, (2 ♀ paratypes); same locality, vii.1960, same collector (1 ♀ paratype); same locality, vi.1960 (1 ♀ paratype); Ibicaré [27°06'S, 51°23'W], ix.1960, Plaumann, F. col., W.W.K. # 3247 (2 ♀ paratypes); Linha Facão, v.1957, Plaumann, F. col., W.W.K. # 8178 (3 ♀ paratypes); Palhoça, P[arque] E[stadual] Serra do Tabuleiro [27°44'S, 48°41'W], 02-10.vi.2003, Silva, R.R. and Dietz, B.H. cols., (1 ♀); P. Bormann, xii.1957, Plaumann, F. col., (1 ♀ paratype); [Seara] Nova Teutônia [27°09'S, 52°18'W], vi.1960, Plaumann, F. col., W.W.K. # 8091 (1 ♀ paratype); same locality, xii.1972, same collector, W.W.K. # 8557 (1 ♀ paratype); same locality, xii.1972, same collector, W.W.K. # 8383 (1 ♀ paratype); São Paulo: Botucatu [22°53'S, 48°26'W], 08.ix.1986, Forti, L.C. col. (1 ♀ – soil trap); same locality, 07.xii.1987, Forti, L.C. and Rinaldi, I.M.P. cols (1 ♀); Cunha, P[arque] E[stadual] Serra do Mar (23°15'S, 45°00'W), 21-22.iv.2001, A.A. Tavares & R.R. Silva cols (4 ♀).

Comments: In relation to the *Oxyepoecus* Rastratus species-group, *O. plaumanni* workers present exclusively the costulate sculpture between the frontal carinae, which do not reach the vertexal margin or laterally the compound eyes (Kempf, 1974: Figs. 27, 28, 29 and 30).

In the original description, Kempf (1974) cited a paratype from Brazil, Rio Grande do Sul state, Tainhas [29°16'S, 50°18'W], collected in April.1959, by F. Plaumann, (W.W.K. # 3247). However, although the pin and label are preserved in the MZSP collection, the specimen is missing from the triangle. We were not able to locate coordinates for Linha Facão, SC.

The distribution of *O. plaumanni* includes only localities at South and São Paulo State at Southeastern Brazil (Fig. 7), both in dense evergreen and drier forests.

Oxyepoecus rastratus (Mayr, 1887) (Figs. 3a-c, 7)

Monomorium rastratum Mayr, 1887:615-6 (♀ Brazil).
Monomorium (*Martia*) *rastratum*: Forel, 1912: 3 (♀ Brazil); Borgmeier, 1928:65 (key).
Martia rastrata: Kusnezov, 1952: 722.
Oxyepoecus rastratus: Ettershank, 1966: 146 (transfer to *Oxyepoecus*); Kempf, 1972:173 (catalogue); Kempf, 1974:498 (description of gyne and male); Bolton, 1995:302 (catalogue).

Monomorium (Martia) rastratum var. *luederwaldti*: Forrel, 1913:219 (♀ Brazil); Luederwaldt, 1918:43; Luederwaldt, 1926:275 (biology); Kempf, 1974:498 (synonymy).

Martia rastrata var. *luederwaldti*: Kusnezov, 1952:722.

Oxyepoecus rastratus var. *luederwaldti*: Ettershank, 1966:146 (transfer to *Oxyepoecus*); Kempf, 1972:173; Kempf, 1974: 498. Bolton, 1995:301 (catalogue).

Worker: t.l. = (2.20-2.80); h.l. = (0.52-0.65); h.w. = (0.43-0.55); s.l. = (0.30-0.40); m.l.e. = (0.09-0.13); m.w.pr. = (0.32-0.40); a.l. = (0.60-0.80); h.f.l. = (0.36-0.48); m.w.p. = (0.18-0.25); m.w.pp. =

(0.21-0.32); c.i. 76-84. Reddish yellow to chestnut brown. Dorsum of head densely costulate, costulae attain laterally compound eye and posteriorly the vertexal margin; the median apron of clypeus smooth and shining; dorsum of pronotum and mesonotum regularly costulate; mesopleuron, metapleuron and side of propodeum densely and longitudinally costulate; basal and declivous faces of propodeum equally densely but transversally costulate (approximately 20 costulae on basal face); peduncle of petiole finely and weakly punctate dorsally and on sides. Abundant, long (subequal to last antennal club segment), suberect hairs on head, dorsum of mesosoma, petiolar and postpetiolar nodes, and gaster; shorter decumbent hairs on head, inclined mesad and dorsad on head sides.

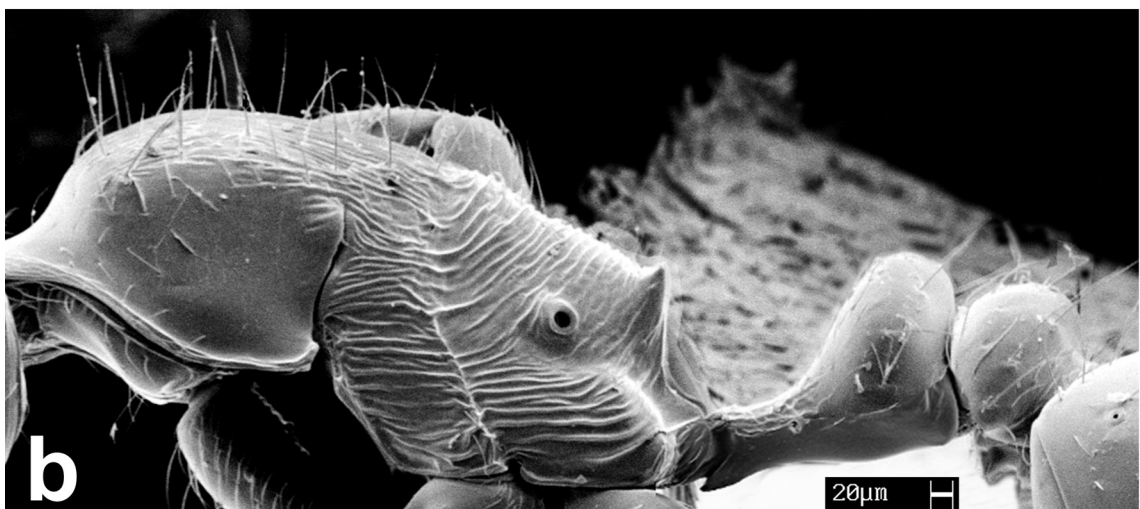
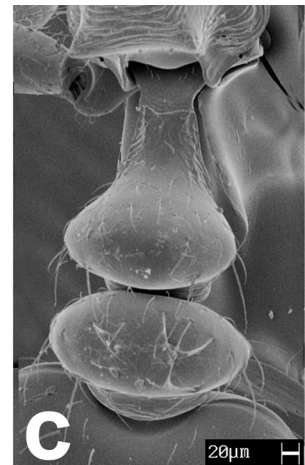
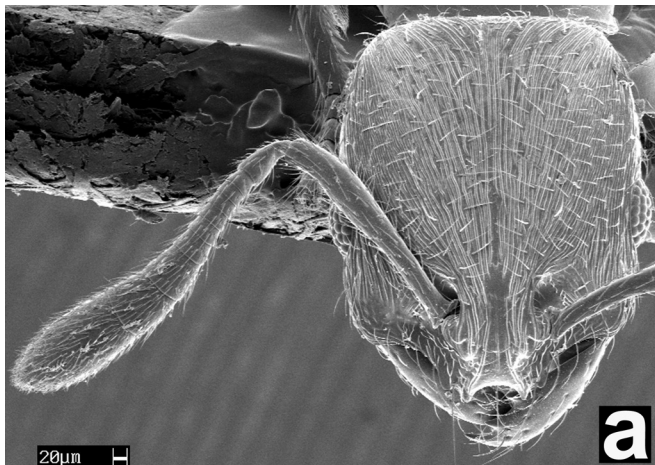


FIGURE 3: Scanning electron micrograph of the workers of *O. rastratus*; a) head in full-face view; b) mesosoma in profile view; c) Petiole and postpetiole in dorsal view.

Head in Fig. 3a (f.f.v.): Mandible with basal border shorter than chewing border, and with deep and broad triangular cleft between basal and the subbasal teeth; clypeus anterior tooth laterally with blunt denticle. Frontal carina short, posteriorly expanded laterad, ending posteriorly before level of anterior orbit of eye; maximum width between outer edges of carinae more than one fourth head width. Compound eye with 5-7 facets r.g.d., total number of ommatidia close to 15. Scape relatively long, but fails to reach vertexal corner when laid back over head, by circa twice apical scape width. Funicular segment I longer than VIII, segments II-VII distinctly broader than long, VIII and IX as long as broad. Vertexal margin straight

Mesosoma in Fig. 3b (p.v.). Promesonotum evenly convex. Shoulders somewhat rounded, gently angulate at anterolateral corner. Metanotal groove shallow to absent (p.v.), metanotal suture indistinct. Basal face of propodeum posteriorly with vertical or oblique tooth. Declivous face laterally carinate.

Petiolear node, scalelike, compressed antero-posteriorly, rounded above; ventrally acute subpetiolear process with prominent blunt tooth points anterad, reaching one fifth of petiolear length; ventral margin of subpetiolear process slightly sinuous, when seen from side. Postpetiolear node broad, shorter than petiolear node (p.v.); subpostpetiolear process shaped as transverse crest, triangular in side view.

Gyne: t.l. = 2.2-2.8; h.l. = 0.52-0.65; h.w. = 0.43-0.55; s.l. = 0.30-0.40; m.l.e. = 0.09-0.13; m.w.pr. = 0.32-0.40; a.l. = 0.60-0.80; h.f.l. = 0.36-0.48; m.w.p. = 0.18-0.25; m.w.pp. = 0.21-0.32; c.i. 76-84. Similar to worker with usual caste differences. Scutum and scutellum finely, densely and regularly longitudinally costulate. Basal face of propodeum transversely costulate, with *circa* 16 costulae. Posterior third of mesopleuron, the metapleuron and sides of propodeum horizontally to obliquely very finely costulate. Eye width 11-13 facets (r.g.d.), exceeding oculomalar distance, and total number of ommatidia from 60 to 100. Ocelli of similar size, their diameter equal to minimum scape width; pronotal shoulder distinct; propodeal tooth stout and prominent. Wings slightly infuscated, venation as usual in genus. The only winged specimen seen has small discoidal cell, and an extra-vein arising from junction of r-m with Rs and extending apicad between Rs and M.

Male: t.l. = 2.9; h.l. = 0.51; h.w. (eyes included) = 0.60; s.l. = 0.12; m.l.e. = 0.24; m.w.pr. = 0.60; a.l. = 0.93; h.f.l. = 0.58; m.w.p. = 0.19; m.w.pp. = 0.24. Color fuscous brown; mandible, antenna, apical half

of tibiae, tarsomeres, tip of gaster testaceous. Head finely yet sharply reticulate-punctate, opaque. Sides of pronotum and mesopleuron smooth and shining, the latter vestigially costulate on posterior margin. Metapleuron and propodeal lateral face horizontally costulate. Scutum nearly smooth and shining, indistinctly sculptured. Scutellum superficially, finely, longitudinally costulate-striate. Basal face of propodeum weakly reticulate-rugose. Declivous face weakly reticulate-rugose, shining. Petiole, postpetiole and gaster smooth and shining, except punctate petiolear peduncle. Legs, especially tibiae and tarsomeres, as well as antennae sharply punctate-punctate and opaque. Mandible with 4 well developed and regularly spaced teeth. Frontal carinae absent. Clypeus transversely strongly convex, little protruding anteriorly. Propodeum bluntly tuberculate, not dentate.

Examined material: BRAZIL: Espírito Santo: Santa Teresa, Estação Biológica Santa Lúcia (19°58'S, 40°32'W), 20-24.i.2002, Shoederer, J.H. and Ribas, C.R. cols, Winkler # 17 and 39 (3 ♀); Minas Gerais: Serra do Caraça [20°04'S, 43°24'W], 1380 m, xi.1961, Martins & Silva col., K. Lenko leg. # 2390 (5 ♀, 2 ♀, 1 ♂); Itabirito, mina, Várzea do Lopes, 18-25.iv.2007, Andrade, R. col. (1 ♀); Paraná: Tunas, Parque das Lauráceas (24°51'S, 48°43'W), 21-29.ii.2001, [R.R.] Silva and [F.] Eberhardt cols., transecto 1 Winkler 07, 30 and 44 (5 ♀); Morretes, Parque Estadual do Pau-Ôco (25°34'S, 48°53'W), 06-11.v.2002, [R.R.] Silva and [F.] Eberhardt cols. Winkler 03, 16, 17, 21, 26 and 53 (5 ♀) (1 ♀ CASC, 1 ♀ AMNH); Rio de Janeiro: Itatiaia, i.1956, Borgmeier col. [22°23'S, 44°37'W] (1 ♀); Santa Maria Madalena, P[arque] E[stadual] do Desengano (21°58'S, 41°57'W), x.2002, Mayhé, A. & Veiga-Ferreira, S. cols, Winkler # 29 and 43 (2 ♀); Teresópolis, P[arque] N[acional] S[erra] dos Órgãos (22°25'S, 43°04'W), 23-27.xi.1999, Rocha [R.P.], Dietz [B.H.], Silva [R.R.] [8 ♀ (one covered with gold for SEM), 1 ♂]; Santa Catarina: Abelardo Luz (26°33'53"S, 52°19'42"W), 20.ix.1999, Silva, [R]ogério [R]osa col. (1 ♀); Blumenau, P[arque] E[stadual] das Nascentes (27°06'15"S, 49°09'14"W), 20-27.x.2000, Silva, R.R. and Eberhardt, F. cols (1 ♀); Seara (27°09'S, 52°18'W), v-xii.1998, Rogério R. Silva col. (1 ♀); Nova Teutônia [27°11'S, 52°23'W], iv.1954, F. Plaumann leg. # 8111 (1 ♀); same locality, vi.1960, same collector, # 8081 (6 ♀); same locality, vi.1960, same collector, # 8327, (1 ♀); same locality, vi.1960, same collector, 300 m-500 m Kempf det. in [19]74 (1 ♀); same locality, vii.1960, same collector, # 3543 (4 ♀ and 2 ♀); same locality, vi.1972, same collector, # 8081 [27°11'S, 52°23'W] (3 ♀);

São Bento do Sul, A[rea] [de] P[roteção] A[m]biental Rio Vermelho, 30.iii-04.iv.2001, Silva, R.R. and Eberhardt, F. cols., [26°21'51"S, 49°16'16"W] (2 ♀); São Bonifácio, P[arque] E[stadual] Serra do Tabuleiro, 08-13.iii.2004, Silva, R.R.; Dietz, B.H. and Albuquerque, N.L. cols., Winkler # 06, 13, 21 and 23 [27°49'06"S, 48°54'41"W] (5 ♀ and 4 ♀) (1 ♀ CECL, 1 ♀ CPDC, 1 ♀ MIZA); São Paulo: Botucatu, 01.ix.1986/13.vii.1987/07.xii.1987, Forti, L.C. and Rinaldi, I.M.P. cols. [22°53'S, 48°26'W] (4 ♀/1 ♀/1 ♀); Cunha, P[arque] E[stadual] Serra do Mar,

21-22.iv.2001, A.A. Tavares & R.R. Silva cols Winkler # 48 [23°15'03"S, 45°00'26"W] (1 ♀); Estr.[ada] S. Paulo-Curitiba km 40, v.1960, W.W. Kempf col. [23°53'S, 46°58'W] (2 ♀); São Paulo, [Serra da] Cantareira, 01.iii.1959, [W.W.] Kempf & [Vitor dos] Santos leg. # 2990 [23°56'S, 47°02'W] (5 ♀); Salesópolis, Est[ação] Biol[ógica] [de] Boracéia, 02.vi.1961, Lenko, K. col. # 1791 [23°31'S, 45°50'W] (8 ♀); Salesópolis, Est[ação] Biol[ógica] [de] Boracéia, ii.1967, Brown, W.L. Jr. [col.], wet forest 850 m [23°31'S, 45°50'W] (4 ♀); same locality, v.1971, same collector

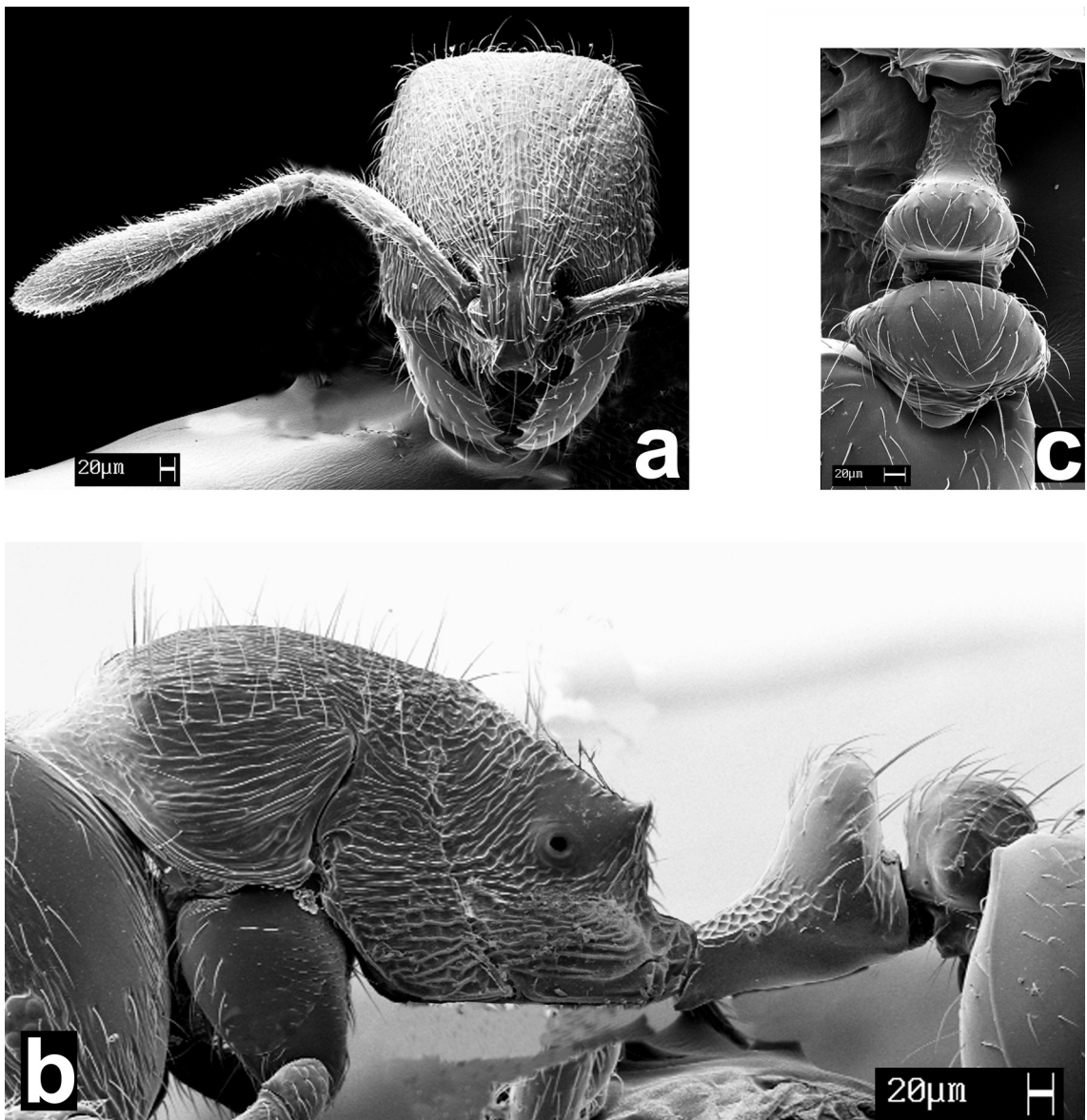


FIGURE 4: Scanning electron micrograph of the workers of *O. reticulatus*; a) head in full-face view; b) mesosoma in profile view; c) Petiole and postpetiole in dorsal view.

[col.] # 6352 [23°31'S, 45°50'W] (5 ♀); Salesópolis, Est[ação] Biol[ógica] [de] Boracéia, 03-05.i.1996, Brandão[C.R.F.], Agosti[D.], Diniz[J.], Silvestre[R.] and Yamamoto[C.I.] col. (2 ♀) (1 ♀ ICNC, 1 ♀ LACM, 1 ♀ USNM); S[ão] J[osé] do Barreiro, S[erra] da Bocaina, 01.v.1995, B[odo] H[asso] Dietz. [col.] [22°39'S, 44°33'W] (2 ♀); Salto Grande, xi.1911, H. Luederwaldt leg. # TB 2687 [22°56'S, 49°58'W] (3 ♀ syntypes of *Martia rastratus* var. *luederwaldti* For.); Tapiraí, 08-14.i.2001, Silva, R.R. and Eberhardt, F. cols., Winkler # 02, 10 and 33 [24°01'55"S, 47°27'56"W] (5 ♀). Paraguay: Canindeyù; Res[erva] Nat[ural] Bosque Mbaracayù, Jejuimi, 02.v.1996, A. Wild com (# 0129) (24°06'S, 55°30'W) (5 ♀); Pastoreo, 03.x.1974, P. Duelli [col.] # 399 [25°23'S, 55°50'W] (3 ♀).

Comments: The exclusive character of the workers of *O. rastratus* in relation to other species in the group is the costulate sculpture between the frontal carinae, which reaches posteriorly the vertexal margin and laterally the compound eyes (Kempf, 1974: Figs. 01, 10, 13, 19, 40, 41 and 42).

Oxyepoecus rastratus is one of the more abundant species in the MZSP collection, being the unique to have male known. Its distribution includes localities throughout the South (Paraná and Santa Catarina states) and Southeastern Brazil (Espírito Santo, Minas Gerais, Rio de Janeiro and São Paulo states), and two localities in Eastern Paraguay, as in Fig. 7.

Oxyepoecus reticulatus Kempf, 1974 (Figs. 4a-c, 8)

Oxyepoecus reticulatus Kempf, 1974:502 (description of worker and gyne); Bolton, 1995:302 (catalogue).

Worker (Holotype): t.l. = 1.90 (1.90-2.30); h.l. = 0.51 (0.48-0.56); h.w. = 0.41 (0.38-0.44); s.l. = 0.31 (0.29-0.35); m.l.e. = 0.07 (0.05-0.07); m.w.pr. = 0.31 (0.27-0.32); a.l. = 0.57 (0.51-0.62); h.f.l. = 0.33 (0.29-0.37); m.w.p. = 0.15 (0.13-0.15); m.w.pp. = 0.23 (0.16-0.23); c.i. 82 (77-84). Color chestnut brown. Mandible, antennae, ventral face of head, declivous face of propodeum, legs, petiolar node, postpetiole and gaster shining, smooth to very superficially and indistinctly sculptured. Remaining parts opaque with following sculpture: head dorsum and vertex irregularly costulate, except for smooth and shining strip between frontal carinae. Pronotum longitudinally costulate dorsally and laterally; strongly

punctate on dorsum, weakly to imperceptible on side, mesonotum and remaining mesosomal side irregularly reticulate and punctate, coarser on metapleuron; basal face of propodeum with anterior half transversely costulate, posterior half with weak and almost imperceptible transverse costulae; declivous face shining. Short hairs relatively abundant on head; curved mesad on head dorsum, anteriorly curved on sides; subdecumbent to decumbent on antennae and legs; suberect and moderately abundant on dorsum of mesosoma, waist and gaster, the latter also with some shorter, recurved hairs.

Head in Fig. 4a (f.f.v.): Mandible with basal border slightly longer than chewing border, with basal tooth separated from subbasal tooth by shallow diastema. Anterior tooth of clypeus with lateral denticle. Frontal carinae short, subparallel, little expanded laterad, ending at level of anterior orbit of eye, maximum width between their outer edges less than one third of head width. Compound eye very small, with some 4 facets r.g.d., total number of ommatidia *circa* 12. Scape fails to reach vertexal corner by distance exceeding maximum scape width. Funnicular segment I longer than VIII and IX taken individually, as long as II-IV combined; segments VIII and IX about as long as broad. Vertexal margin straight.

Mesosoma (p.v.) in Fig. 4b. Promesonotum gently convex, transition between the dorsal and lateral surfaces of pronotum continuous, almost rounded. Metanotal groove not impressed in lateral view, metanotal suture indistinct. Basal face of propodeum posteriorly with a very small but pointed tooth. Declivous face laterally subcarinate.

Petiole strongly pedunculate (d.v.), node high and dorsally rounded, somewhat compressed antero-posteriorly, but not much expanded laterad; subpetiolar process anteriorly shaped as small tooth, obliquely and forward oriented. Postpetiole much broader than petiole, expanded laterad; subspatiolar process with anterior margin projecting as crest.

Gyne (Paratype): t.l. = 2.50; h.l. = 0.55; h.w. = 0.45; s.l. = 0.33; m.l.e. = 0.11; m.w.pr. = 0.40; a.l. = 0.71; h.f.l. = 0.37; m.w.p. = 0.17; m.w.pp. = 0.27; c.i. 83. Resembling worker, with distinctive characters of caste. Cephalic dorsum finely, longitudinally costulate, with conspicuous interstitial punctures, sculpture attaining both vertex and eyes, as in worker. Eye with some 10 facets r.g.d. Laterotergite of pronotum, katepisternum and rest of mesosomal sides with horizontal costulae, the interstitial microsculpture almost imperceptible. Pronotum dorsolaterally finely and

obliquely costulate. Scutum and scutellum longitudinally costulate, opaque. Basal face of propodeum with about 10 transverse rugulae. Propodeal teeth short but pointed, distance between their tips subequal to width of petiole. Posterior surface of postpetiole with several transverse costae. The available gyne specimen had no wings.

Male: unknown.

Examined material: BRAZIL: Minas Gerais: Viçosa, 06.v.1988, M.V.B. Queiroz col., cafézal [coffee plantation] [20°45'S, 42°52'W] (1 ♀); Paraná: Guaragi, v.1964, F. Plaumann leg. # 4008, [25°16'S, 50°14'W] (1 ♀ paratype); same locality, v.1964, F. Plaumann leg. # 4580, collected 1000 m 25°16'S, 50°14'W (1 ♀ paratype); Mariópolis, without date, F. Plaumann leg. [26°21'S, 52°33'W] (1 ♀ paratype); Tunas, Parque das Lauráceas, 21-29.ii.2001, [R.R.] Silva and [F.] Eberhardt cols., transecto 1 Winkler 43 [24°51'16"S, 48°43'00,4"W] (3 ♀); Rio Azul, x.1959, F. Plaumann [col.] # 3188, 1000 m [25°44'S, 50°47'W] (1 ♀ paratype); Rolândia, 06.iv.1955, W. Kempf [col.] # 1414 [23°18'S, 51°22'W] (2 ♀ paratypes); Santa Catarina: Chapecó, v.1957, F. Plaumann leg. [27°06'S, 52°37'W] (5 ♀ paratypes); same locality, vi.1960, same collector, (4 ♀ paratypes); same locality, vii.1960, same collector, (3 ♀ paratypes); Concórdia, vii.1958, F. Plaumann leg. [27°13'S, 52°01'W] (1 ♀ paratype); Linha Facão, v.1957, F. Plaumann [col.] (6 ♀ paratypes); P. Bormann, xii.1957, F. Plaumann [col.], (1 ♀ paratype); Seara (Nova Teutônia), viii.1952, F. Plaumann [col.], Borg[meier] collection # 5954 [27°09'S, 52°18'W] (12 ♀ holotype and paratypes); same locality, viii.1952, F. Plaumann [col.] 27°11'S, 52°23'W (6 ♀ paratypes); Seara, v-xii.1998, Rogério R. Silva col. 27°09'S, 52°18'W, transecto 1 Winkler (2 ♀); São Paulo: Agudos, 25.iii.1955, W. Kempf [col.], # 1405 [22°27'S, 49°00'W] (8 ♀ paratypes); same locality, 4.i.1956, W. Kempf [col.], # 1552, (1 ♀ paratype); same locality, 08.i.1956, W. Kempf [col.], # 1560, (2 ♀ paratypes); Campos do Jordão, 16.x.1956, W. Kempf [col.], # 1601 [22°44'S, 45°34'W] (1 ♀ paratype); Itatinga, 19.x.1991, B.H. Dietz col. mata litter [23°07'S, 48°35'W] (5 ♀); Jacupiranga, xi.1963, F. Plaumann [col.], # 4089 [24°42'S, 48°00'W] (1 ♀); [São Bernardo do Campo] Estrada Velha São Paulo – Santos [Old São Paulo – Santos Highway], 08.viii.1960, W. Kempf [col.] [23°49'S, 46°28'W] (6 ♀ paratypes).

Comments: In the *Rastratus* species-group, *O. reticulatus* workers present exclusively the integument almost

entirely covered by irregular somewhat undulate costulae on the head disc, mesosoma and dorsal petiolar peduncle (Kempf, 1974: Figs. 23, 24, 25 and 26).

Oxyepoecus reticulatus has been registered in several localities in South and Southeastern Brazil from Minas Gerais to Santa Catarina states (Fig. 8), more commonly in relatively dry forests.

Oxyepoecus rosai n. sp.

(Figs. 5a-c, 8)

Oxyepoecus rosai n. sp. Albuquerque & Brandão. Holotype: worker. Brazil: São Paulo: Salesópolis [23°39'S, 45°53'W], 20-26.x.1997, C. Klingenberg & C.I. Yamamoto col., attracted to sardine baits; deposited in MZSP.

Paratypes (all from Brazil): São Paulo: forty one workers and two gynes from Salesópolis (Same locality of the Holotype, but collected in different dates and by different collectors); 33 workers and 2 gynes deposited in MZSP, one worker deposited in AMNH, one worker deposited in CASC, one worker deposited in CECL, one worker deposited in CPDC, one worker deposited in ICNC, one worker deposited in LACM, one worker deposited in MIZA, one worker deposited in USNM.

Etymology: we are pleased to dedicate this species to our friend and colleague, Rogério Rosa da Silva, the most efficient collector in our team.

Worker (Holotype and paratypes (N = 33) variation within brackets): t.l. = 2.33 (2.30-2.40); h.l. = 0.60 (0.60-0.63); h.w. = 0.45 (0.43-0.48); s.l. = 0.35 (0.35-0.38); m.l.e. = 0.10 (0.10-0.13); m.w.pr. = 0.33 (0.30-0.35); a.l. = 0.65 (0.65-0.68); h.f.l. = 0.35 (0.35-0.38); m.w.p. = 0.20 (0.20-0.23); m.w.pp. = 0.25 (0.25-0.28); c.i. 75 (72-76). Color chestnut brown, gaster fuscous. Irregularly costulae and rugulate sculpture covering almost all head dorsum integument, except by clypeus, around antennal insertions and vertex; almost all mesosoma irregularly reticulate, except antero-lateral portion of pronotum, area around propodeal spiracle, petiolar peduncle dorsum, node of petiole and postpetiole smooth and shining. Hairs moderately abundant, short and subdecumbent, on head dorsum mesad oriented, anteriorly curved on head sides; dorsum of mesosoma with suberect hairs, backwards oriented on petiolar and postpetiole nodes; gaster without interspersed shorter and decumbent hairs.

Head as in Fig. 5a (f.f.v.): Mandible with basal border slightly shorter than chewing border, basal tooth separated from subbasal tooth by shallow diastema. Anterior tooth of clypeus mesially directed with smaller lateral denticle. Frontal carinae gently convex and subparallel over antennal sockets, maximum width between outer edges always less than one fourth head width. Compound eye with 4-5 facets r.g.d., height less than oculomalar; total number of ommatidia not exceeding 13. Antennal scape fails to reach vertexal corner by distance approximately equal to maximum

scape width. Funnicular segment I longer than II-V combined, segments II-VII distinctly broader than long, VIII and IX as long as broad. Vertexal margin straight.

Mesosoma with promesonotum gently rounded on shoulders. Metanotal groove almost indistinct (p.v.). Basal face of propodeum immarginate on sides, posteriorly with a small tooth. Declivous face laterally weakly carinate.

Petiole pedunculate, node scarcely compressed antero-posteriorly (d.v.) club shaped; subpetiolar pro-

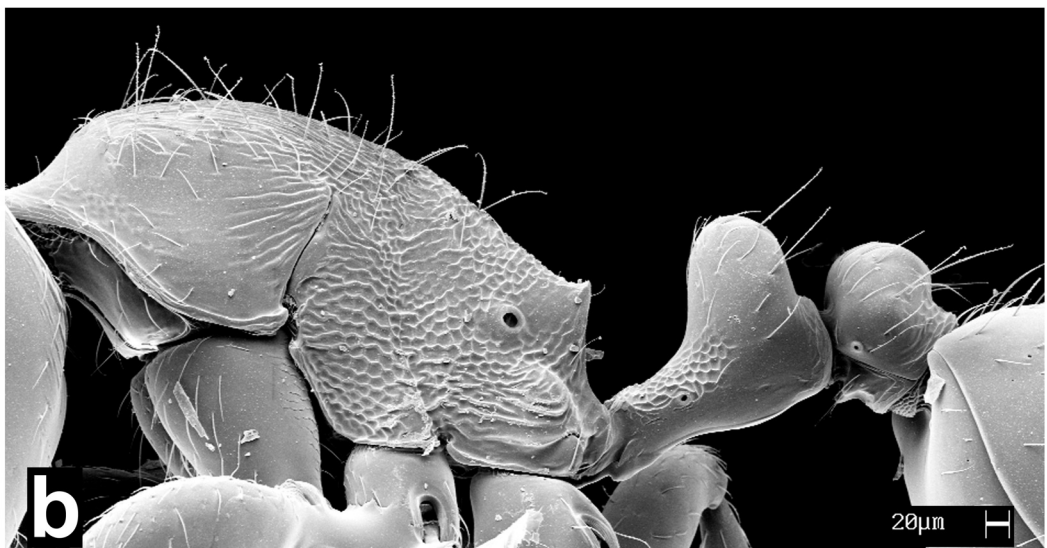
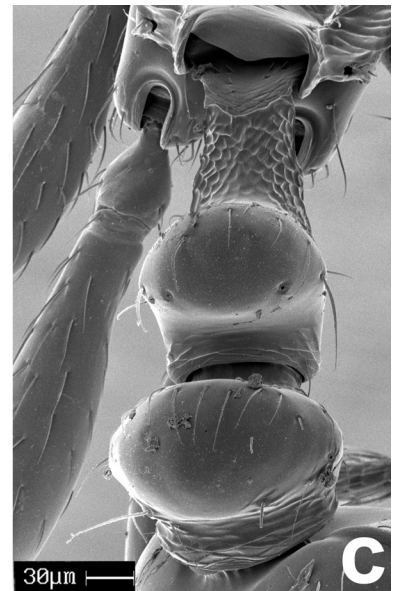
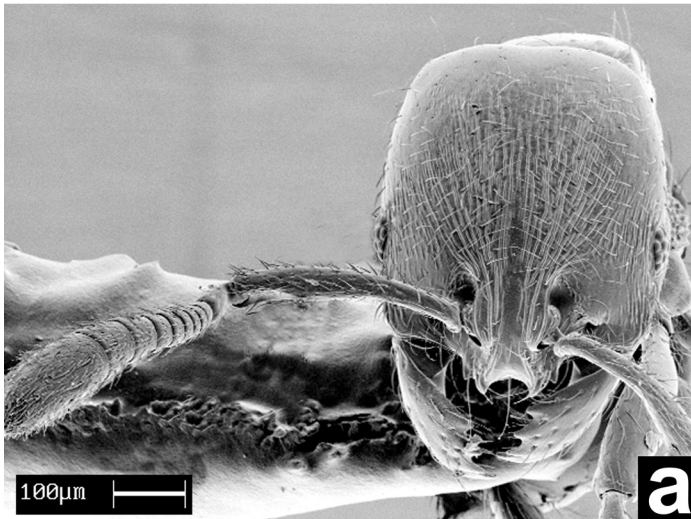


FIGURE 5: Scanning electron micrograph of the workers of *O. rosai* n. sp.; a) head in full-face view; b) mesosoma in profile view; c) Petiole and postpetiole in dorsal view.

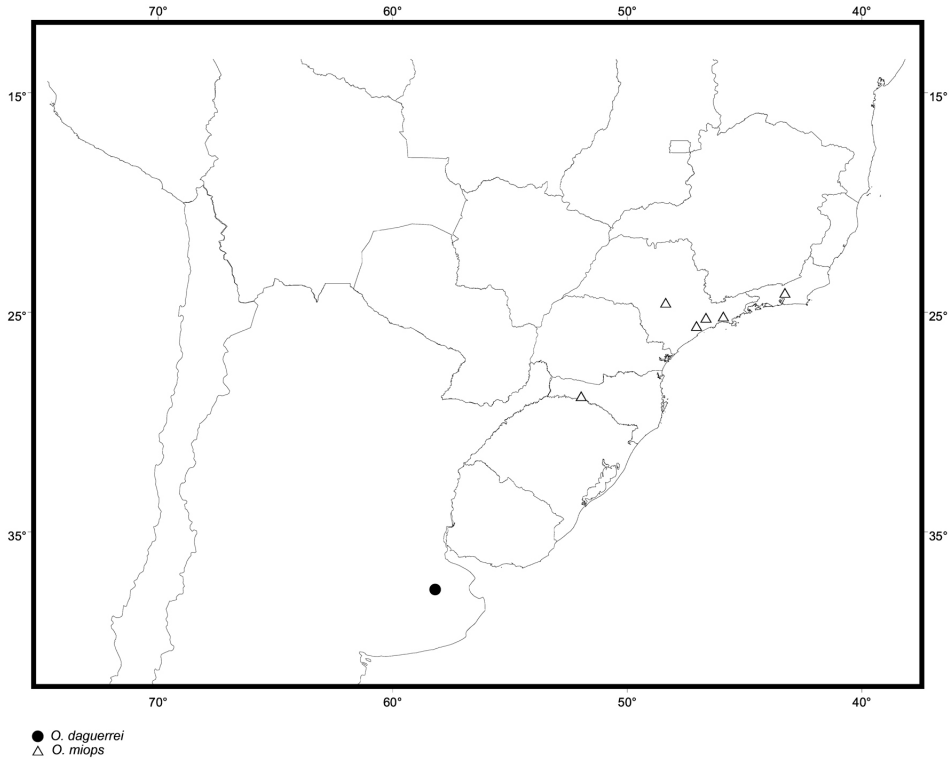


FIGURE 6: Map of distribution of *O. daguerrei* and *O. myops*.

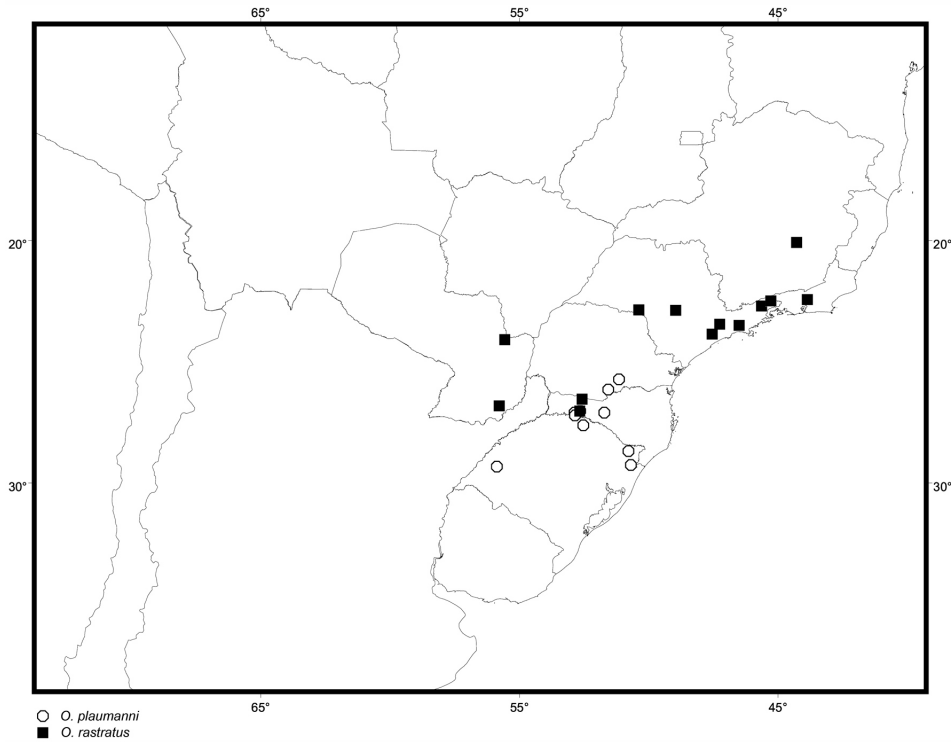


FIGURE 7: Map of distribution of *O. plaumanni* and *O. rastratus*.

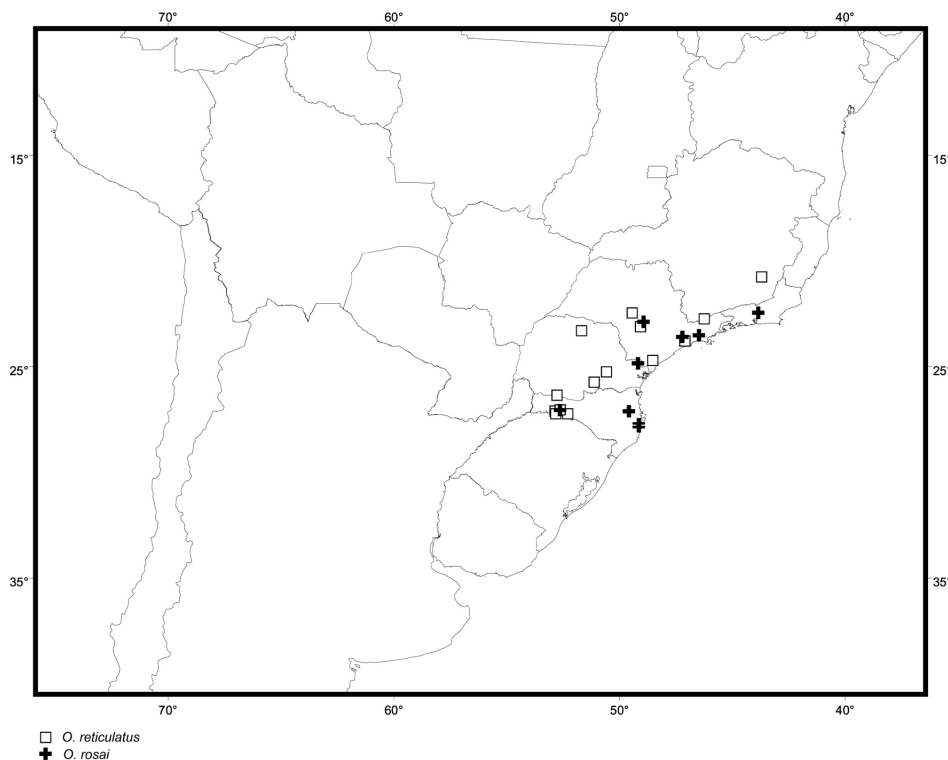


FIGURE 8: Map of distribution of *O. reticulatus* and *O. rosai*.

cess with a small, blunt and obliquely oriented denticle anteriorly. Postpetiole very broad, not as high as petiolar node; subpostpetiolar process shaped as small, transversal crest.

Gyne (variation of gynes paratypes, N = 2): t.l. = (2.80-2.93); h.l. = (0.60-0.63); h.w. = (0.50-0.53); s.l. = (0.40-0.43); m.l.e. = (0.25-0.30); m.w.pr. = (0.43-0.45); a.l. = (0.70-0.73); h.f.l. = (0.38-0.40); m.w.p. = (0.18-0.20); m.w.pp. = (0.33-0.35); c.i. (83-85). Almost same workers character states, with caste differences of: three ocelli very small, with same diameter, approximately half minimum thickness of antennal scape, compound eye with 8 facets r.g.d., and circa 40 in whole eye.

Male: Unknown.

Comments: In the *Rastratus* species-group, *O. rosai* workers present the integument of mesopleuron and lateral pronotum irregularly sculptured, as in *O. myops*, but differs from the later by the larger compound eyes, and by the smooth integument on the head vertex and lateral portions of the pronotum, petiolar node, and postpetiole.

The distribution of *O. rosai* includes only localities at South and Southeastern Brazil, between São Paulo and Santa Catarina States (Fig. 8). The specimens were attracted to sardine baits or recovered from the leaf-litter using Winkler extractors.

Examined material: BRAZIL: Paraná: Tunas, Parque das Lauráceas, 21-29.ii.2001, [R.R.] Silva and [F.] Eberhardt cols., transecto 1 Winkler 44 [24°51'S, 48°43'W] (1 ♀); Rio de Janeiro: Teresópolis, P[arque] N[acional] da S[erra] dos O[rgãos], 23-27.xi.1999, Rocha [R.P.], Dietz [B.H.], Silva [R.R.] cols., Winkler # 07 and 17 [22°27'S, 42°59'W] (3 ♀); Santa Catarina: Blumenau, P[arque] E[stadual] das Nascentes, 20-27.x.2000, Silva, R.R. and Eberhardt, F. cols., Winkler # 18 [27°06'S, 49°09'W] (2 ♀); Palhoça, P[arque] E[stadual] Serra do Tabuleiro, 02-10.vi.2003, Silva, R.R. and Dietz, B.H. cols., [27°44'S, 48°41'W] (1 ♀); São Bonifácio, P[arque] E[stadual] Serra do Tabuleiro, 08-13.iii.2004, Silva, R.R.; Dietz, B.H. and Albuquerque, N.L. cols., Winkler # 02, 08, 12, 13 and 14 [27°49'S, 48°54'W] (10 ♀); Seara, vi-vii.1999, Rogério R. Silva col. 27°09'S, 52°18'W (5 ♀); São Paulo: Botucatu, 08.ix.1986, Forti, L.C. col [22°53'S, 48°26'W] (5 ♀); Salesópolis, 02-06.v.1997, D. Agos-

ti, C.R.F. Brandão and C.I. Yamamoto col., [23°39'S, 45°53'W] (16 ♀ paratypes and 1 ♀ paratype); same locality, 12-17.vi.1997, C.I. Yamamoto col, same coordinates (1 ♀ paratypes); same locality, 05-07.vii.1997, C.I. Yamamoto col, same coordinates (9 ♀ paratypes); same locality, 05-07.ix.1997, C.I. Yamamoto col, same coordinates (2 ♀ and 1 ♀ paratypes); same locality, 20-26.x.1997, C. Klingenberg & C.I. Yamamoto col., attracted to sardine baits (Sardinha) (1 ♀ holotype and 1 ♀ paratype); São Paulo, Parque da Independência, 12.x.1998, C.I. Yamamoto col., [23°35'S, 46°36'W] (1 ♀ Paratypes).

DISCUSSION

Oxyepoecus has been considered very rare in collections, but our studies show that they are rather common in the leaf litter of most localities where recent surveys have been conducted in the Mata Atlântica (see Comments in Albuquerque & Brandão, 2004). It is interesting to note that one of these localities we recently surveyed, Cunha, São Paulo state has four *Oxyepoecus* species (*O. myops*, *O. rastratus*, *O. longicephalus* and *O. rosai*), three of which were found in one square meter of leaf-litter (sample 48; all four but *O. rosai*). In Salesópolis, SP, we recorded five of the 17 known *Oxyepoecus* species (*O. myops*, *O. punctifrons*, *O. rastratus*, *O. rosai* and *O. vezenyii*). Both Cunha and Salesópolis are localities circa 1.000 m above sea level, covered by pristine evergreen dense forest. With this addition to the knowledge of *Oxyepoecus* species distributions, it seems we are approaching the expected number of species.

Although *Oxyepoecus* samples come mostly from forested localities, workers have been less frequently collected in places with more open vegetation, as open "cerrados" (savannas). Comparing the examined material of most species dealt here, one can see that mostly the specimens come from the same localities. This is because these are localities we surveyed recently, extracting ants from the leaf-litter, or localities where careful collectors lived most of their lives (Seara, SC, for instance, where F. Plaumann worked many years).

The minute size of *Oxyepoecus*, their color and cryptic habits hamper direct observation of their habits in natural conditions (especially inside shaded forest where light rarely reaches the ground). Kusnezov (1952) put forward the hypothesis that *Oxyepoecus* ants are inquilines of *Pheidole* and *Solenopsis* nests. Although it was not our objective to test his hypothesis, other solenopsidine ants are known to invade and

prey upon other ant nests (Adams *et al.* 2000), but there is no direct evidence *Oxyepoecus* species share this habit.

The fact that *Oxyepoecus* workers are relatively abundant in material extracted from leaf litter samples, while dealate gynes are seldom found in the litter and in no instance we found larvae in litter samples, suggests that they nest in the soil, where the gynes and larvae live, but workers leave the nest periodically to search for food. *Oxyepoecus* has been attracted to honey or sardine baits set over the ground in different habitats, which suggests they are generalist foragers. In just one case, a gyne and two workers of *O. punctifrons* (Vezenyii group) were found by Rogerio R. da Silva under the bark of a the canopy branch in a recently fallen Leguminosae (Albuquerque & Brandão, 2004).

RESUMO

No primeiro artigo desta série (Albuquerque & Brandão, 2004) revisamos o grupo de espécies Vezenyii do gênero exclusivamente neotropical de formigas Oxyepoecus (Myrmicinae: Solenopsidini). Completamos agora a série, atualizando informações sobre as espécies do grupo Vezenyii e revendo a taxonomia do outro grupo de espécies de Oxyepoecus (Rastratus), descrevendo Oxyepoecus myops n. sp. e Oxyepoecus rosai n. sp. e redescrevendo as espécies já conhecidas [Oxyepoecus daguerrei (Santschi, 1933), O. mandibularis (Emery, 1913), O. plaumanni Kempf, 1974, O. rastratus Mayr, 1887, e O. reticulatus Kempf, 1974], adicionando registros de localidade e comentando o conjunto dos poucos dados sobre a biologia das espécies do grupo. Apresentamos também uma chave de identificação de espécies de Oxyepoecus baseada em operárias.

PALAVRAS-CHAVE: Formicidae; Myrmicinae; Solenopsidini; *Oxyepoecus*; Revisão; Grupo *Rastratus*.

ACKNOWLEDGMENTS

We would like to thank Dr. Jacques Delabie, Dr. Manfred Verhaagh, J. Ketterl, and Rogério R. Silva for the loan and collection of several specimens used in the present work, which was supported by the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), and by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). We also thank Rodrigo Feitosa and two anonymous referees for critically reading the manuscript. Lara M. Guimarães helped in coating specimens and taking SEM pictures.

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Recebido em: 29.07.2008

Aceito em: 18.08.2009

Impresso em: 30.09.2009