

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Insecta Mundi

Center for Systematic Entomology, Gainesville,
Florida

March 1993

South American *Oxybelus* II. The *emarginatus* group (Hymenoptera, Sphecidae)

Richard M. Bohart

University of California, Davis, CA

Follow this and additional works at: <https://digitalcommons.unl.edu/insectamundi>



Part of the [Entomology Commons](#)

Bohart, Richard M., "South American *Oxybelus* II. The *emarginatus* group (Hymenoptera, Sphecidae)" (1993). *Insecta Mundi*. 386.

<https://digitalcommons.unl.edu/insectamundi/386>

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

South American *Oxybelus* II. The *emarginatus* group (Hymenoptera, Sphecidae)

Richard M. Bohart
Department of Entomology
University of California
Davis, CA 95616 U.S.A.

Abstract

The 13 South American members of the *Oxybelus emarginatus* group are keyed, new species described, and illustrations given. New species are: *cinemucro* (Argentina), *genisei* (Brazil), *mendozae* (Argentina), *schlingeri* (Venezuela), *schusteri* (Galapagos), *slanskyae* (Peru), *stangei* (Argentina), *vardyi* (Peru), and *wasbaueri* (Ecuador).

Introduction

Thomas Say described *Oxybelus emarginatus* (1837). This common North American species is the first of its group to be named from the western hemisphere. It was redescribed and figured by Bohart and Schlinger (1957). I have identified 13 related species in South America. One of these is *O. cordatus* Spinola (1851), which I have treated in a separate paper (Bohart, 1992). Of the remaining 12, one was named by Brèthes (1913), *O. modestus*, a homonym which I renamed *fritzi* (Bohart, 1993a). Pate (1943) named *O. callani* and *polyceros*. The other 9 species are described herein as new.

The *emarginatus* group is characterized by having a relatively simple male clypeus. Although broad in typical crabronid fashion, it is covered with silvery pubescence and has a weakly defined median lobe. This may end apically in one to three small pockets or areoles. There is no indication of the three rather prominent teeth characteristic of males in the other large group exemplified by *uniglumis* Linnaeus (1758). Females are less easily characterized. However, the median clypeal carina of the *emarginatus* group is mostly obscured by pubescence and not raised into a tooth as in members of the *uniglumis* group. In addition, a useful but less positive fact is that the body length of the *emarginatus* group is usually about 3-3.5 mm (male) and 4-5 mm (female). Sexes of the *uniglumis* group are usually considerably larger.

Characters of importance in species distinction are first the nature of the squamae (winglike metanotal projections) and mucro (spadelike upper median propodeal projection). The squama may be slender or

broad but nearly always has a point whose location may be lateral or posterior, visible from above or somewhat hidden (figs. 1, 9, 11). The mucro may be short or long, all dark or with varying degrees of translucent membrane, straight-sided or flaring toward the apex. As in most *Oxybelus*, all members of this group have the mucro apex slightly to obtusely emarginate. Color characters are useful but they must be used with caution. The basal forewing plate (post-tegula) may be red or black, but some variation must be expected. Likewise, the female pygidial plate is red in some species, black in others. However, intermediates or exceptions may occasionally occur. Leg markings also vary within certain limits. They are most dependable in females. Tergal spots or bands are generally better developed in males. Their extent can be used taxonomically in both sexes. Still, markings are subject to some variation in widespread species.

Several thousand specimens of the *emarginatus* group have been examined. The following museums and individuals have cooperated. Type deposition in species descriptions is indicated by the relevant city in capitals.

BUENOS AIRES, J. Genise, National Museum of Argentina.

DAVIS, L. Kimsey, S. Heydon, University of California Bohart Museum.

GAINESVILLE, L. Stange, Florida State Collection of Arthropods.

ITHACA, G. Eickwort, E. Hoebeke, Cornell University.

LAWRENCE, R. Brooks, University of Kansas Snow Museum.

LOGAN, G. E. Bohart, Utah State University.

outwardly, basal half of hindtibia, all tarsi mostly, complete bands on T-I to IV, that on I broadly emarginate in front; reddish are: most of flagellum dully, post-tegula partly, pygidial plate; wings nearly clear. Pubescence silvery, dense on face to above middle, moderate on genal area, scutum and mesopleuron, abundant across apices of terga, sparse on pygidium. Punctuation moderately fine and close on vertex, scutum, mesopleuron, and terga. LID equal to eye breadth, squama long oval with point almost invisible from above (fig. 9), mucro a little shorter than squama, expanding from base, apical emargination almost semicircular, indentations between terga deep (side view), pygidial plate angled at 50°

Male. Length 4-5 mm. Pronotal collar rarely black or partly so, mucro apex less deeply emarginate, hindtibia more extensively yellow, lateral spines prominent on T-II to VI.

Holotype female (DAVIS), Cafayate, Salta, Argentina, XII-11-75 (R. M. Bohart). Paratypes (all from Argentina), 38 males and 5 females from the following Provinces: **Salta:** Cafayate, San Carlos; **Catamarca:** Belén, Punta de Balastos; **Misiones:** Loreto; **Santiago del Estero:** Termas Rio Hondo; **La Rioja:** Macasin, Chilecito; **San Juan:** Caucete; **Mendoza:** Beazley, Arroyo Carrizal; **Neuquen:** near Zapala, Collón Curá; **Rio Negro:** Choele Choel, Paso Cordoba. Monthly dates are from October to March. Paratype collectors and depository Museums are: L. Peña (NEW YORK, DAVIS, ITHACA, WASHINGTON, SAO PAULO, SACRAMENTO, LONDON; L. Stange + A. Willink (TUCUMAN); R. Bohart (DAVIS); F. Bosq (LAWRENCE); Andrae (SALTA).

This small species is related to *fritzi* which also has the silvery tergal fringes, oval squama, short and distally expanded mucro (fig. 9), complete tergal bands, and red pygidium. The dark rather than red hindfemur, more extensively pale mucro, and more deeply constricted tergal bases differentiate *cinemucro*. A few specimens have the scape yellow in front. The name refers to the mostly pale mucro.

Oxybelus cordatus Spinola

Oxybelus cordatus Spinola 1851:364. Lectotype female, Chile (TURIN).

This species has been discussed previously (Bohart, 1992). The long oval squama, short and expanded mucro (fig. 4), and red T-V in both sexes are characteristic. It is known only from Chile, where it is the commonest species.

Oxybelus fritzi R. Bohart

Oxybelus modestus Brèthes 1913:142. Lectotype male, Argentina: Mendoza (BUENOS AIRES). Nec *Oxybelus modestus* Kohl 1892.

Oxybelus fritzi Bohart 1993a: New name for *modestus* Brèthes, preoccupied.

The extensively red legs, including the hindfemur, as well as the short and expanded mucro (fig. 1), long oval squama, and incomplete tergal bands characterize the species. It is relatively abundant in Argentina but its range embraces most of South America, except Chile.

Oxybelus genisei R. Bohart, new species

Female holotype. Length 4.7 mm. Black marked with yellow: mandibles mostly, scape in front, pronotal collar and lobe, squama partly (plus translucency), femora distally, tibiae on fore and midlegs outwardly, hindtibia basally, T-I to III laterally, transverse spot on T-I largest; reddish are: flagellum mostly, tarsi dully, pygidial plate; wings weakly stained. Pubescence silvery, reaching up to middle of eye, moderately abundant on gena and mesopleuron, present but weak on tergal apices; pygidial setae reddish golden. Punctuation fine and close, mesopleuron and terga a little shiny. LID equal to eye breadth; squama long oval with point short (fig. 3); mucro short and broad, partly membranous (fig. 3); pygidial plate angled at 60°.

Male. Length 4.5-5 mm. Pronotal collar sometimes dark medially, T-VII dark red or sometimes dark brown, hindtibia all yellow outwardly. Lateral tergal spines weak but present on V-VI.

Holotype female (DAVIS), Nova Teutonia, Santa Catarina, Brazil, I-1970 (F. Plaumann). Paratypes, 44 males, 29 females, topotypical (F. Plaumann). Other paratypes, 11 males, 12 females, Pará, Brazil (C. F. Baker). Collection dates are January through March. Paratypes are deposited in all cooperating museums.

The short, broad, flaring, and partly translucent mucro (fig. 3) is similar to that of *fritzi*. However, the legs of *genisei* are mostly black and yellow rather than extensively red. About 25 percent of female specimens have the post-tegula red. I first considered these as a distinct species, but I now place them as a variety. The female pygidial plate is rarely partly or all dark. This is a relatively abundant species, especially in Brazil and Argentina, but I have seen mate-

rial from all other South American countries, except Chile. It is named for Jorge Genise, a well-known Argentine worker in Aculeate Hymenoptera.

Oxybelus mendozae R. Bohart, new species

Female holotype. Length 4.5 mm. Black marked with yellow: mandible mostly, squama, mucro on distal half (translucent), all tibiae basally, apical streaks on lateral third of T-I to III; reddish are: fore and midtibiae partly, last abdominal segment; wings lightly stained. Pubescence pale, moderately dense on head, scutum, and mesopleuron; present but moderate on apices of T-I to V, off-silvery on pygidial plate. Punctuation moderate and fairly close on vertex, scutum and mesopleuron; close on terga. LID equal to eye breadth, squama long oval with point lateral (fig. 2), mucro a little shorter than squama, expanding from base, apical emargination obtuse, pygidial plate angled at 50°.

Male. Length 4-5 mm. Hindtibia more extensively yellow outwardly, tergal bands narrow but often nearly complete on T-I to V, silver haired tergal apices more prominent, punctuation a little more coarse, T-III to VII with slender but distinct lateral spines.

Holotype female (TUCUMAN), Tupungato, Mendoza, Argentina, I-26-77 (A. Willink). Paratypes from Argentine Provinces: **Mendoza:** 1 female, Tupungato (A. Willink); 5 males, Potrerillos (A. Willink, etc.); 3 males, Las Heras (A. Willink); 1 male, Pie del Cerro de la Gloria (A. Willink). **La Rioja:** 1 female, Quebrada la Guadica (A. Terán, A. Willink); 2 males near Angulos (C. Porter, L. Stange). Paratypes in museums at TUCUMAN and DAVIS, all collected in December and January.

Oxybelus mendozae is similar in most respects to *genisei*, both having the dark post-tegula, oval squama, and broadened mucro (fig. 2). The more coarse scutal punctuation of *mendozae* is a consistent difference. Also, the absence of markings on the scape and pronotum are additional characters. The species is known only from Argentina.

Oxybelus schlingeri R. Bohart, new species

Female holotype. Length 5 mm. Black, marked with light yellow: mandible mostly, lateral third of pronotal collar, lobe, lateral scutellar dot, squama, distal spots on fore and midfemora, all tibiae externally, lateral spots in diminishing size on T-I to III; red

are: flagellum beneath, post-tegula, pygidial plate; wings lightly stained. Pubescence silvery on face, gena, mesopleuron, and laterally on T-II-V, pygidial setae bright coppery. Punctuation fine and close on mesopleuron and scutum, weak and fine on semipolished terga. LID equal to eye breadth; squama about as broad as long, notched posteriorly between inner lobe and point (fig. 7); mucro dark, short, parallel-sided, apical notch at 90°; pygidial plate angled at 50°.

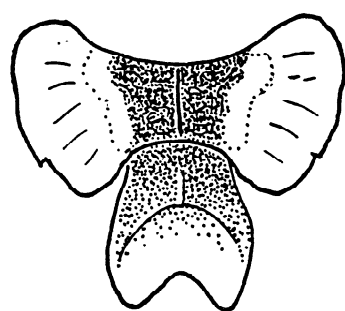
Male. Length 4.5 mm. Clypeus with a narrow indentation on medial edge, tarsi yellowish, mucro twice as long as broad.

Holotype female (DAVIS), El Tucuco, Perija, Zulia, Venezuela (A. A. Grigarick, *et al.*). Paratypes: **Venezuela:** 4 females, same data as holotype; 3 females (WASHINGTON), 20 k e. Carora (A. Menke, D. Vincent); 2 females (WASHINGTON), Rosario (A. Menke, D. Vincent); **Ecuador:** 2 females (LONDON, DAVIS), Tungurahua, Yanayacu (L. Peña); 3 females (SAN FRANCISCO), 32-41 mi n. Santa Elena, Guayas (E. Ross, E. Schlinger); male (SAN FRANCISCO), 10 mi n. Manglar, Alto, Guayas (E. Ross, E. Schlinger); male (GAINESVILLE), Pichinca, San Rafael, Quito (C. Porter, A. Cerbone); **Colombia** male, 5 females (WASHINGTON, DAVIS), Tol. Almero (E. Peyton); **Peru:** 3 males (SAN FRANCISCO, DAVIS), Chancay River Valley (E. Ross, A. Michelbacher); 2 males (LONDON), Rio Mocha, 4 k s. Trujillo (C. & M. Vardy); 2 males (LONDON), Simbal (C. & M. Vardy); male (DAVIS), Trujillo City (C. & M. Vardy); female (LONDON), 100 k n. Trujillo City (C. & M. Vardy). Collection dates were January to August.

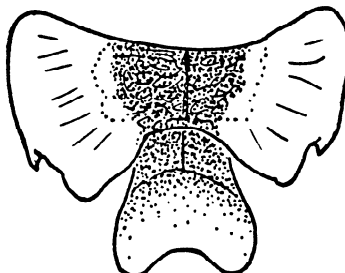
Both sexes of this species have the tergal markings lateral, squamal point not plainly posterior to inner lobe but visible from above (fig. 7), and mucro rather narrow and dark. The female pygidial plate is red. About half of the specimens I have seen have the post-tegula black instead of red. I have not included this variety in the type series. The species is named for my friend, Evert I. Schlinger, who collected some of the paratypes.

Oxybelus schusteri R. Bohart, new species

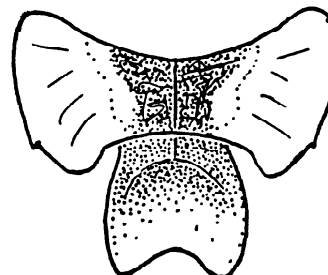
Female holotype. Length 5.5 mm. Black marked with yellow: mandible, pronotal collar and lobe, lateral scutellar spot, metanotum, apicoventral spots on fore and midfemora, foretibia in front, mid and hindtibiae basally, lateral spots on T-I to V; red are: flagellum dully within and apically, post-tegula, pygidial plate; wings lightly stained. Pubescence silvery



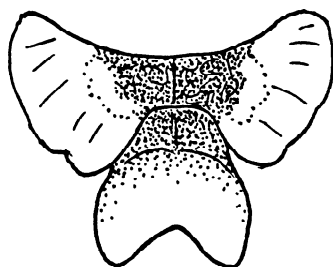
1. fritzi



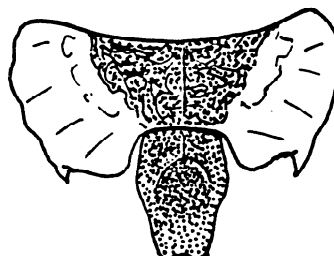
2. mendozae



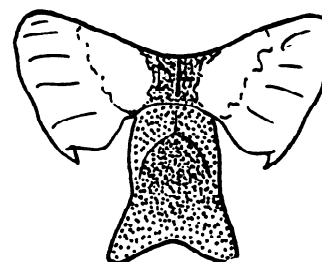
3. genisei



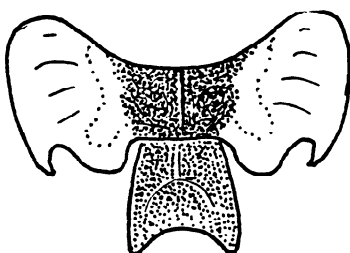
4. cordatus



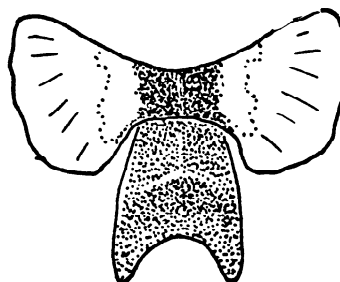
5. wasbaueri



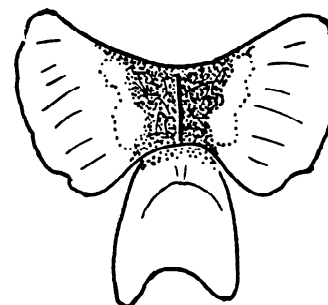
6. vardy



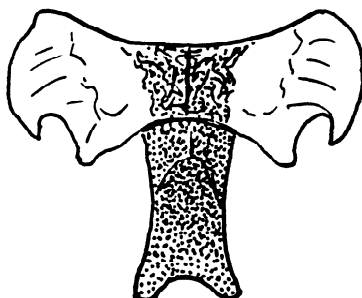
7. schlingeri



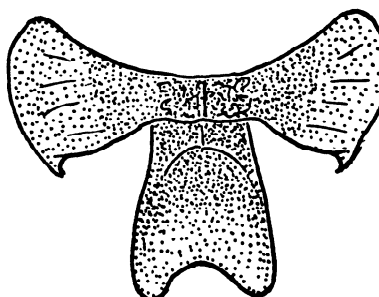
8. schusteri



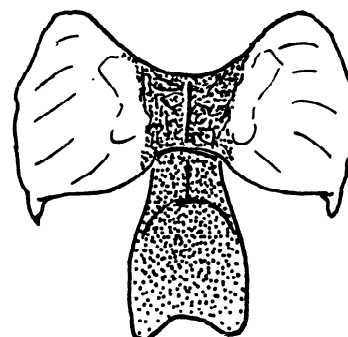
9. cinemucro



10. polyceros



11. stangei



12. slanskyae

Figures 1-12. All figures are of the metanotal squamae and propodeal mucro of females. These are comparative and not drawn to scale.

on face, postocular area, mesopleuron, and terga apicolaterally; mostly brownish on mesonotum, golden on pygidial plate. Punctuation moderately fine and close, terga a little shiny. LID equal to eye breadth; squama long oval, point obscured from above (fig. 8); mucro stout, as long as squama, emargination semi-circular; pygidial plate angled at 55°.

Male. Length 4.5-5.5 mm. Legs more extensively yellow, all tibiae yellow outwardly, tarsi mostly yellow, squamae separated by black, post-tegula somewhat brownish red, pygidium brown, lateral tergal spines inconspicuous.

Holotype female (DAVIS), Darwin Research Station, Santa Cruz Island, Galapagos Islands, Ecuador, II-25-64 (R. O. Schuster). Paratypes, 5 males, 41 females, same data as holotype but various dates in II-64; 4 males, 2 females, same island as holotype, Bella Vista Trail, II-11-64 (R. O. Schuster). Paratypes distributed to cooperating museums.

Related species with red post-tegula and pygidial plate are *wasbaueri* and *schlingeri*, both from northern South America, and described herein. In *wasbaueri* the red-marked last two terga, dark female hindmetatarsus, and sharp tooth flanking the median clypeal area are distinctive. In *schlingeri* the shorter squama with well separated point, and the less expanded mucro (fig. 7) will differentiate. The species is named for my friend, the late Robert Schuster who collected the type series. The species is a Galapagos endemic.

Oxybelus slanskyae R. Bohart, new species

Female holotype. Length 4 mm. Black marked with yellow: mandible mostly, pronotal collar (dark medially) and lobe, squama, apicoventral spot on fore and midfemora, fore and midtibiae outwardly, hindtibia basally, T-I with lateral spot, T-II to IV with thin apical marks; reddish are: flagellum beneath; wings weakly stained. Pubescence silvery, dense on lower half of face, moderate on mesopleuron and tergal apices, setae of pygidial plate golden. Punctuation fine and close on vertex with slight transverse microridging, fine and close on scutum, fine and a little separated on mesopleuron, fine and weakly impressed on overall polished terga. LID about equal to eye breadth, squama with point slightly but distinctly posterior (fig. 12), mucro partly membranous, pygidial plate angled at 50°.

Male. Length 3-3.5 mm. Antenna somewhat darker, pronotal collar mostly black, tarsi yellowish toward base.

Holotype female (DAVIS), Tingo Maria, Huanuco, Peru, VI-23-82 (M. Wasbauer, J. Slansky). Paratypes, 7 males, 10 females, same data as holotype except VI-22-82. One male paratype Huachi Beni, Bolivia, X-1921 (W. M. Mann, WASHINGTON). Paratypes at cooperating museums.

Distinguishing characteristics in combination are the black post-tegula and last tergum, slightly posterior squamal point (fig. 12), incomplete tergal markings, spotted midfemur, and overall polished terga. The species is named for my friend, Joanne Slansky Wasbauer, who participated in collection of most of the type series. The species is known only from Peru and Bolivia.

Oxybelus stangei R. Bohart, new species

Female holotype. Length 4 mm. Black marked with yellow: mandible mostly, pronotal lobe dully, forefemur distally, fore and midtibiae outwardly, hindtibia basally; reddish are: flagellum on distal half, pygidial plate; wings clear. Pubescence silvery, reaching nearly to midocellus behind eye, thin on mesopleuron, weak on terga but more prominent on T-V, pygidial plate with relatively long, well spaced, silvery setae. Punctuation moderate on vertex, moderately coarse and a little separated on mesonotum, moderate but separated by shiny areas 1-2 PD on mesopleuron and terga. LID 1.5x eye breadth, squama about as broad as long, lateral point slightly but definitely exceeding inner lobe posteriorly (fig. 11), black mucro about as long as squama, flared toward apex, pygidial plate angled at 50°.

Male. Length 3.5-4 mm. Squama with more pronounced posterior point and partly yellow, LID equal to eye breadth, hindtibia with yellow streak for entire length, T-I-II with small lateral yellow spots, T-IV to VI with short lateral spines, T-VII dark.

Holotype female (TUCUMAN), Angustaco, Salta, Argentina, XII-7-68 (A. Willink, L. Stange). Paratypes, 5 males, 1 female (TUCUMAN, DAVIS, ITHACA), same data as holotype. Other paratypes from Argentine Provinces: **Salta:** 10 males, 1 female (LAWRENCE, DAVIS, SALTA), Cafayate (L. Peña); **Rio Negro** (DAVIS), female, Isla Choele Choele (J. & L. Stange); **Catamarca:** 3 females (TUCUMAN, WASHINGTON), Los Nacimientos de Abajo (A.

Willink, etc.); male (DAVIS), Belén (R. Bohart); 2 males (DAVIS), Andalgala (G. Bohart); 7 males (NEW YORK, DAVIS), Punta de Belasco (L. Peña); female (LONDON), Santa Maria (C. & M. Vardy); **La Rioja**: 2 males (NEW YORK, DAVIS), E. Villa Union (L. Peña); **Santiago del Estero**: 7 males, 3 females (LONDON, DAVIS), San Fernando. Also, paratypes from Brazil: **Santa Catarina**: 7 males (LONDON, DAVIS, WASHINGTON), Nova Teutonia (F. Plaumann); Bolivia: male (LAWRENCE), Las Carreras. Paraguay: **Parana**: male (NEW YORK), Saltos del Guaira (L. Peña). Collection dates range from October to March.

Characteristic of *O. stangei* are the small size, squamal point exceeding inner lobe posteriorly (fig. 11), pubescence of frons all silvery, punctation moderate and slightly separated on scutum, mesopleuron and terga. Most significant in the female are the broadened LID, and mostly black terga except red T-VI. A similar species is *callani* Pate, but that has the scape yellow in front, and the female LID about equal to an eye breadth as well as having the frons pubescence becoming yellowish above.

The species is named for my friend, Lionel Stange, who has been an ardent collector of Hymenoptera in South America. The species occurs in Argentina, Brazil, and Paraguay.

Oxybelus vardy R. Bohart, new species

Female holotype. Length 4.5 mm. Black marked with yellow: mandible mostly, scape in front, pronotum, lateral scutellar spot, squama (plus transparency), distal spots on fore and midfemora, tibiae outwardly, fairly large lateral spot on T-I dorsum, narrower spots separated by a spot length on T-II-IV posteriorly; reddish are: apical half of flagellum beneath, tegula and post-tegula, last 2 abdominal segments; wings lightly stained. Pubescence mostly silvery, off-silvery on mesonotum, golden on pygidial plate. Punctation fine and close on vertex, scutum, mesopleuron, and terga. LID equal to eye breadth, squama a stout triangle with point slightly exceeding small inner lobe (fig. 6), mucro about as long as squama and flaring slightly, pygidial plate angled at 60°

Male. Length 4 mm. Mucro a little longer.

Holotype female (TUCUMAN), Lurin, Lima, Peru, I-18-75 (R. Garcia). Paratypes, all from Peru: male (DAVIS), same data as holotype; 3 males (TUCUMAN, DAVIS), near Lurin, Lima, III-1-52 (W. Weyrauch); 1

female (LONDON), Chiclayo, Lambayaque, VI-13-67; male (LONDON), Cieneguilla, 27 k se. Lima, IV-7-83 (C. & M. Vardy); male (LONDON), Rio Mocho, 4 k s. Trujillo, V-1-83 (C. & M. Vardy); 2 males, 1 female (SAN FRANCISCO, DAVIS), Chancay River Valley, III-15-51 (E. Ross, A. Michelbacher).

Oxybelus vardy is similar to *callani* Pate, which also has the squamal point posterior, as well as the post-tegula and pygidial plate red. However, the former differs in the distinctive squamal shape (fig. 6), closer punctation, and red on the prepygidial tergum.

The species, known only from Peru, is named for my friend, Colin Vardy, who has collected Hymenoptera extensively in South America.

Oxybelus wasbaueri R. Bohart, new species

Female holotype. Length 5 mm. Black marked with whitish yellow: mandible mostly, pronotal lobe and lateral spot on pronotal collar, scutellar spots, squama (plus transparency), femorotibial joint of fore and midtibia, rest of foretibia outwardly, basal spot on hindtibia, narrow lateral spots on T-I to IV; reddish are: flagellum within, post-tegula, last abdominal segment and most of preceding; wings weakly stained. Pubescence silvery, reaching up about to middle of frons, moderate on mesopleuron and apicolaterally on terga, golden on pygidium. Punctation fine and close on vertex and scutum, fine and a little spaced on mesopleuron, upper mesopleuron with some fine ridging, fine and weakly impressed on semipolished terga. Corners of median clypeal area sharply projecting, LID equal to eye breadth, squamal point small and posterolateral but not exceeding inner lobe (fig. 5), short mucro with sides translucent and a little converging to a weakly emarginate apex (fig. 5); pygidial plate angled at 50°, sides a little convex.

Male. Length 4-4.5 mm. Median clypeal lobe without a sharp lateral tooth, LID a little less than eye breadth, T-I-III with small pale spots laterally, T-IV sometimes black, tibiae often with yellow streaks outwardly, hindmetatarsus black, mucro black, slender, moderately emarginate at apex, no lateral tergal spines.

Holotype female (DAVIS), Rio Chota, Carchi, (35 k on Ibarra-Tulcan section of Pan American Hiway, Ecuador, I-2-90 (M. & J. Wasbauer). Paratypes, 10 males, 14 females (SACRAMENTO, DAVIS and other cooperating museums), same data as holotype. Other paratypes, male, female (WASHINGTON), Calderon, Pichincha, Ecuador, V-1-58 (R. W. Hodges).

Characteristic in combination are the red last two terga, red post-tegula, finely punctate mesopleuron, semipolished terga, incomplete pale tergal bands, squama as described above, and unusually small (female) or narrow (male) mucro. Also, male hindmetatarsus is black. The unique squama-mucro structure (fig. 5), red post-tegula, and restricted markings on the polished terga distinguish it from related species. It is named for the ardent collector, my friend, Marius Wasbauer. Known only from Ecuador.

Literature Cited

- Bohart, R. M.** 1992. The genus *Oxybelus* in Chile. *J. Hymenoptera Research* 1:157-163.
- Bohart, R. M.** 1993a. South American *Oxybelus* I. Notes on types of Spinola, F. Smith, Brèthes, Pate, and Schrottky. *Insecta Mundi* 6:189-191.
- Bohart, R. M. and E. I. Schlinger.** 1957. California wasps of the genus *Oxybelus*. *Bull. Calif. Insect Surv.* 4:103-134.
- Brèthes, F. J.** 1913. Himenópteros de la América Meridional. *Anal. Mus. Nac. Buenos Aires* 24:35-165.
- Linnaeus, C. von.** 1758. *Systema naturae* etc. 10th ed. Tomus I. 823 pp. Laurentii Salviae, Holmiae.
- Pate, V. S.** 1943. New South American *Oxybelus*. *Revista de Entomologia* 14:281-287.
- Say, T.** 1837. Descriptions of new North American Hymenoptera and observations on some already described. *Boston J. Nat. Hist.* 1:672-790.
- Spinola, M.** 1851. In Claudio Gay, *Historia física y política de Chile, Zoología*. Vol. 6:364-365.