



Description of a new species of *Bradynobaenus* (Hymenoptera: Bradynobaenidae) from Argentina, with a key to the females of the genus

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Abstract

The new species *Bradynobaenus riojanus* (Hymenoptera: Bradynobaenidae) is described from two localities in the province of La Rioja, Argentina. It is closely related to *B. chubutinus* Brèthes. A revised key to the females of the genus is provided.

Key words: Bradynobaenidae, *Bradynobaenus*, key to species

Introduction

Bradynobaenus Spinola is the only genus in the subfamily Bradynobaeninae, which is a group of wasps that has been included by different authors in the past among mutillids, scoliids, or tiphids (Genise, 1986). This uncertain systematic position was studied by Brothers (1975), who found evidence that the bradynobaenines, together with the typhoctines, chypotines and apterogynines form a monophyletic group, the family Bradynobaenidae. Brothers and Carpenter (1993), and Brothers (1999) corroborated the close phylogenetic relationship of these four groups, and the monophyly of the family. The last molecular phylogenetic studies of Vespoidea by Pilgrim *et. al* (2007) suggest that Bradynobaenidae is a paraphyletic group, wherein Bradynobaeninae is a sister group of Tiphinae, and Chypotinae and Thyphoctinae are related with the other subfamilies of Tiphidae.

Genise (1986) included the Bradynobaenidae as the only family within Bradynobaenoidea, raising several other groups of aculeate wasps to the superfamily level. This classification has not been followed by other hymenopterists; most follow Brothers (1975), including the family within the Vespoidea (Carpenter, 1981; Gauld and Bolton, 1988; Fernández, 2001; Fernández and Sharkey, 2006).

The Bradynobaenidae are represented in South America by the two subfamilies Bradynobaeninae and Typhoctinae. The first subfamily includes the single genus *Bradynobaenus*, species of which are restricted to xeric areas of north and central Chile and of western and southern Argentina. The Typhoctinae include the genera *Typhoctes* Ashmead and *Typhoctoides* Brothers (Typhoctini), and *Eotilla* Schuster and *Prototilla* Schuster (Eotillini). With the exception of *Typhoctes*, which is most diverse in Central America and reaches Colombia to the south (Brothers, 2006), all the other genera are endemic to desertic areas in Chile, Argentina and Bolivia.

The genus *Bradynobaenus* has been revised by Genise (1986), and catalogued by Nonveiller (1990). Seven species are recognized: *B. australis* Perez D'Angello, *B. gayi* Spinola, and *B. wagenknechti* Reed from Chile, and *B. bidentatus* Genise, *B. chubutinus* Brèthes, *B. cordobensis* Genise, and *B. subandinus* Genise from Argentina. Most species are known from the female sex, except *B. australis* for which only males are known; both sexes are known for *B. chubutinus*, *B. gayi* and *B. wagenknechti*.

The purpose of the present contribution is to describe a new species from the province of La Rioja in western Argentina, and to present a revised key to the females of the genus.

Material and methods

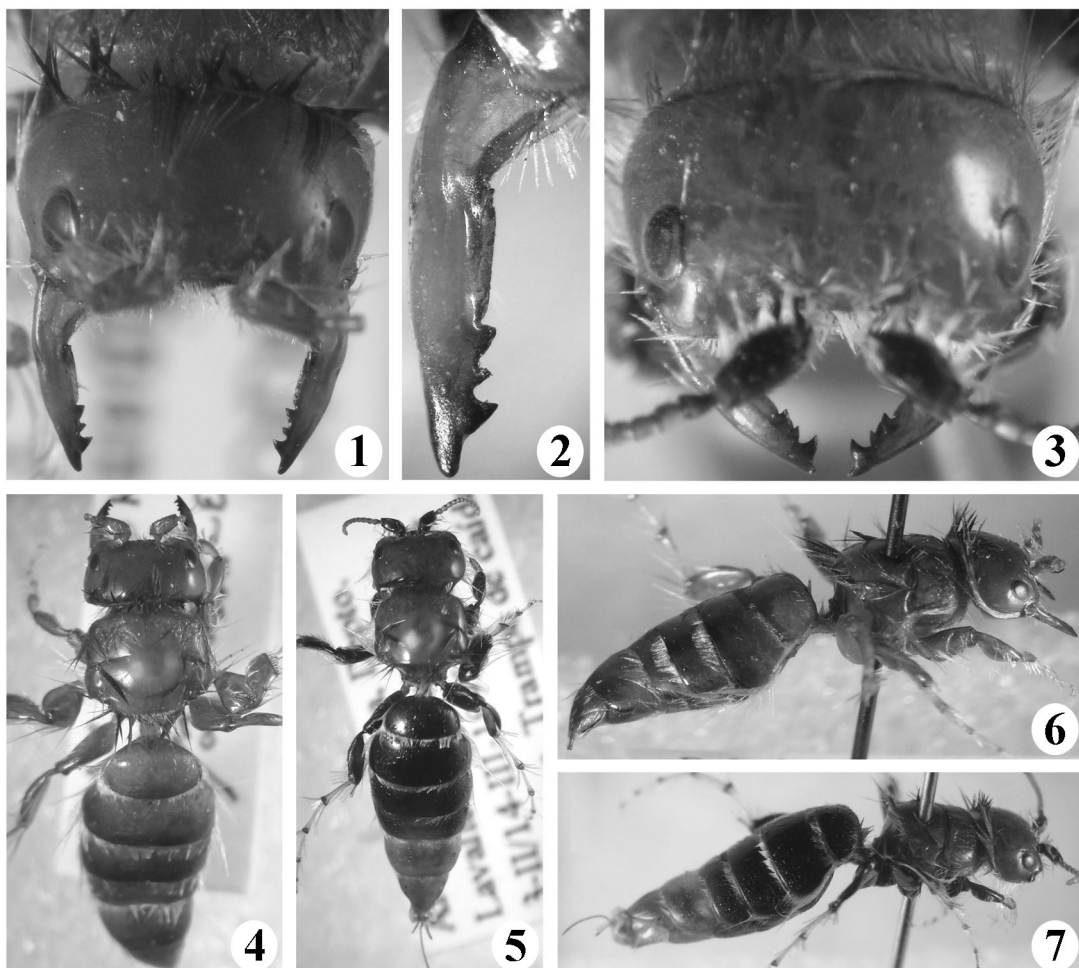
Specimens are deposited at the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia” (MACN). Terminology follows Brothers (1975).

The paratype specimen was collected in the field with a yellow pan trap containing water and a drop of detergent. Museum abbreviations: **MACN**, Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina.

Bradynobaenus riojanus Torréns and Roig-Alsina, New Species

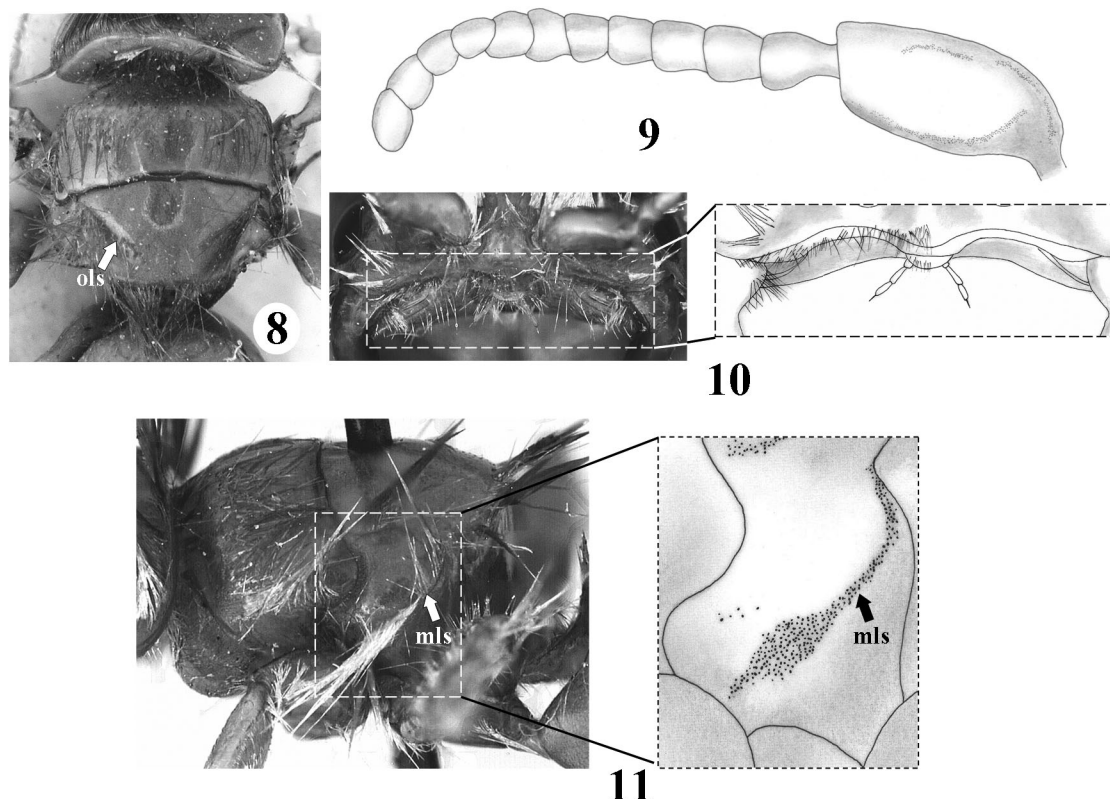
(Figs. 1–11)

Type material. Holotype female. ‘Argentina, La Rioja: Vinchina, 4–XI–1970, G. Williner’ deposited in MACN. **Paratype:** La Rioja: Udpinango, 16/25–III–2006, P. Fidalgo, G. Fidalgo and J. Torréns (1 female, MACN).



FIGURES 1–7. *Bradynobaenus riojanus* n. sp. (female) and *Bradynobaenus chubutinus* (female): 1, *B. riojanus*, head and mandible (dorsal view). 2, *B. riojanus*, mandible (dorsal view). 3, *B. chubutinus*, head and mandible (frontal view). 4, *B. riojanus*, habitus (dorsal view). 5, *B. chubutinus*, habitus (dorsal view). 6, *B. riojanus*, habitus (lateral view). 7, *B. chubutinus*, habitus (lateral view).

Diagnosis. This species is closely related to *B. chubutinus*. Both species are distinguished from all other *Bradynobaenus* by having an oblique row of setae on the mesonotum, which runs from the antero-lateral angle towards the midline, reaching posteriorly beyond the middle of the mesonotum (Figs. 4, 5, 8, ols), and by having a mesopleural line of setae, which is strongly arcuate backwards in front of the pronotal lobe (Fig. 11, mls). *Bradynobaenus riojanus* is readily distinguished from *B. chubutinus* by the proximal tooth of the mandible without a basal thickening (Fig. 2) and by the yellowish to reddish brown color of the scape, legs except tarsi, and the basal four metasomal terga, which are black in *B. chubutinus*.



FIGURES 8–11. *Bradynobaenus riojanus* n. sp. (female): 8, mesosoma (dorsal view); 9, antenna (dorsal view, rows of points in the scape correspond to setae); 10, clypeus (frontal view); 11, mesopleuron (lateral view). (mls= mesopleural line of setae, ols= oblique line of punctures and setae).

Holotype female. Length, 11.0 mm; maximum width 3.2 mm. Coloration: head, scape, mesosoma, legs except tarsi, and metasoma pale yellowish-brown; pedicel, flagellum, and tarsi whitish; apex and teeth of mandible black.

Head. Depressed, in dorsal view 2.1X wider than long (Fig. 1). Short, transverse clypeus with median part projected above labrum more or less straight (Fig. 10). Scape as long as following five flagellomeres; proximal four flagellomeres cylindrical, following flagellomeres slightly compressed (Fig. 9). Mandible as long as length of head; with three distal teeth in a row, the intermediate the smallest, the proximal without basal thickening (Figs. 1, 2); basal end of median cutting edge straight. Head with dense rows of setae, as follows: a U-shaped row of whitish setae on upper, flattened surface of scape; basal group of dense whitish setae on lower surface of scape; short row of whitish setae on outer half of pedicel; dense row of whitish setae bordering dorsally antennal socket; oblique row of whitish setae from base of mandible towards frons, running between eye and antennal socket; short row of whitish setae above eye; row of short, whitish setae along margin of clypeus; row of dense, long, setae from base of mandible and surrounding all the head along subgenal area and vertex, setae whitish on subgenal area, reddish brown on vertex; row of short, reddish-brown setae on postoccipital suture.

Mesosoma. Depressed, in dorsal view 1.1X longer than wide (Figs. 6, 8). Pronotum in dorsal view 2.0X wider than long; anterior margin of dorsal surface with irregular band of strong, separated punctures bearing reddish-brown setae, this band continued laterally, but antero-lateral angle with punctures dense, coalescent, and bearing whitish setae, from antero-lateral angle to just below pronotal lobe with band of dense punctures and whitish setae; lower lateral margin of pronotum also with punctures and whitish setae; lateral surface smooth between setose areas. Mesonotum 2.0X wider than long; at each side with oblique line of punctures and reddish-brown setae, running from antero-lateral angle towards midline, and reaching posteriorly beyond middle of scutum (Fig. 8); meso-metathoracic suture with dense row of reddish-brown setae. Fused metanotum and propodeum vertical, surface smooth, polished. Area between upper end of meso-metapleural suture and propodeal spiraculum, swollen, bearing small triangular depression close to mesonotal margin. Mesopleural line of setae arcuate backwards in front of pronotal lobe; on middle of mesopleuron forming densely punctate band, which is connected by a few or no punctures with line of setae in front of mid coxa (Fig 11); setae on mesopleuron whitish; surface of mesopleuron smooth and polished anteriorly and posteriorly to line of setae. Meso-metapleural suture distinct; separation of metapleuron and propodeum indicated by feeble depression. Femora with long, whitish setae posteriorly; tibiae with rows of whitish setae; spiniform setae on tibiae and tarsi also pale. Foreleg: tibia on posterior margin with four apical spiniform setae; basitarsus apically broadened, posterior margin with row of eight stout, flattened, spiniform setae, increasing in length distally, apical one as long as combined length of following two tarsomeres; anterior margin at apex with two stout setae, longer than following tarsomere; tarsomeres II and III at apex with a single posterior flattened spiniform seta, longer than following tarsomere, and two strong anterior setae; tarsomere IV with one apical seta. Mid leg: dorsal margin of tibia on proximal half with six short spiniform setae, apex of tibia with spiniform setae surrounding insertion of tarsus in a single row; tarsomeres I, II and III, with spiniform setae surrounding insertion of following tarsomere. Hind leg: tibia on anterior and posterior surfaces with longitudinal row of setae close to upper margin, but upper margin bare, polished, without any punctures. Distribution of spiniform setae similar to that of mid leg.

Metasoma. Depressed, in dorsal view 1.8X longer than maximum width (Figs. 4, 6). First tergum with anterior vertical surface entirely covered with setae; posterior dorsal surface bare. Second to fifth terga with dense row of setae on posterior margin. Sixth tergum with continuous carina enclosing dorsal surface; carina laterally without distinct tooth. First to third sterna with setae all over their surface, fourth to sixth sterna with setae restricted to posterior margin.

Variation. The paratype differs from the holotype as follows. Length 14.0 mm, maximum width 4.0 mm. Color of integument: head, scape, pedicel, mesosoma, legs except tarsi, and metasoma reddish brown; metasomal terga darker apically. Foretibia on posterior margin with three short, apical spiniform setae. Basitarsus of foreleg on posterior margin with row of nine stout, flattened, spiniform setae. Dorsal margin of mid tibia on proximal half with three short spiniform setae.

Etymology. The specific name refers to the province where the specimens were collected.

Key to females of *Bradynobaenus* (females of *B. australis* unknown)

- 1 Mesonotum at each side with oblique line of punctures and setae running from antero-lateral angle towards midline, and reaching posteriorly beyond middle of scutum (Figs. 4, 5, 8, ols); with no punctures along anterior margin of scutum. Mesopleural line of setae (Fig. 11, mls) arcuate backwards in front of pronotal lobe; forming densely punctate band on middle of mesopleuron, which is connected by a few or no punctures with line of setae in front of mid coxa 2
- Mesonotum without oblique line running towards center of scutum; with few punctures and setae along anterior margin of scutum, either in a row or dispersed. Mesopleural line of setae interrupted or rather straight in front of pronotal lobe; middle of mesopleuron variable..... 3
- 2 Proximal tooth of mandible basally thickened (Fig. 3). Scape, most of legs except tarsi, and basal four metasomal

- terga black (Figs. 5, 7) *B. chubutinus*
- Proximal tooth of mandible not thickened (Figs. 1, 2). Scape, most of legs except tarsi, and all metasomal terga light brown (Figs. 4, 6) *B. riojanus* **n. sp.**
- 3 Mandible with three teeth, middle tooth close to proximal tooth and displaced internally. Mesopleural line of setae forming dense band with coalescent punctures all way from upper end of meso-metapleural suture to area in front of mid coxa *B. gayi*
- Mandible with two teeth, or with three evenly spaced teeth in a row. Mesopleural line of setae in front of pronotal lobe not forming a band, but with punctures more or less in a row to absent 4
- 4 Mandible with three teeth; proximal tooth blunt, of similar size or slightly smaller than middle tooth. Mesopleural line of setae in front of pronotal lobe with punctures forming continuous row. Metasoma with dark spots on second to fifth tergum, or uniformly light brown 5
- Mandible with two teeth, or if three, proximal tooth pointed, larger than reduced middle tooth. Mesopleural line of setae in front of pronotal lobe indicated by a few spaced punctures to absent. Metasoma with dark spots on second tergum only 6
- 5 Length 4.7–5.0 mm. Metasoma uniformly pale yellowish-brown. Setae on antennal scape, head, and dorsum of mesosoma whitish *B. cordobensis*
- Length 6.0–9.0 mm. Metasoma reddish brown, second to fifth terga with dark lateral spots. Setae on antennal scape, head, and dorsum of mesosoma brown to black *B. wagenknechti*
- 6 Mandible with two teeth. Mesopleural area behind line of setae finely sculptured *B. bidentatus*
- Mandible with three teeth. Mesopleural area behind line of setae smooth, polished *B. subandinus*

Discussion

The mesopleuron of female bradynobaenines presents a line, or sometimes a band, of punctures bearing strong setae. This line runs from the anterior margin of the mid coxa ventrally, across the mesopleuron, and ends dorsally at the juncture of the meso-metapleural suture with the lateral margin of the mesonotum. This line was mentioned by Genise (1986), following Reid (1945), as the posterior margin of a fused prepectus. As a matter of fact, the prepectus in *Bradynobaenus* is an independent, rather slender sclerite, hidden by the postero-lateral margin of the pronotum, similar to that of the genus *Chyphotes*, depicted by Brothers (1975). Consequently, the line of punctures and setae does not mark a limit between sclerites, but traverses the mesopleuron. This line, called here the “mesopleural line of setae,” varies among species as shown in the key. It is continuous, broadest, and with coalescent punctures in *B. gayi*, and at the other extreme of variation it has separated punctures, and fades or disappears in the upper part, as in the pair of species *B. bidentatus* and *B. subandinus*.

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