

Revisionary notes on *Bentonia* van Achterberg, 1992 (Hymenoptera: Braconidae: Orgilinae) with description of two new species

Y. Braet* & M. Tignon

Braet Y. & M. Tignon. Revisionary notes on *Bentonia* van Achterberg, 1992 (Hymenoptera: Braconidae: Orgilinae) with description of two new species.

Zool. Med. Leiden 72 (4), 11.xii.1998: 51-58, figs 1-11.— ISSN 0024-0672.

Yves Braet, UER de Zoologie Générale et Appliquée, Faculté Universitaire des Sciences Agronomiques de Gembloux, 2, Passage des déportés; B-5030 Gembloux, Belgique. (e-mail: zoologie@fsagx.ac.be).

*Correspondence should be addressed to this author.

Marylène Tignon, UER de Biologie Moléculaire et de Physiologie Animale, Faculté Universitaire des Sciences Agronomiques de Gembloux, 2, Passage des déportés; B-5030 Gembloux, Belgique.

Key words: Braconidae; Orgilinae; *Bentonia*; Peru; Mexico; Venezuela; key.

Two new species of the genus *Bentonia* van Achterberg, 1992 (Braconidae: Orgilinae) (*B. inca* from Peru and *B. xochiquetzalis* from Mexico) are described and partly illustrated. A third undescribed species was found for which some characters are listed. The distribution of *B. scutellaris* van Achterberg, 1992, is extended west to Peru and *B. longicornis* van Achterberg, 1992, north to Venezuela. An identification key is added.

Introduction

During the revision of the Neotropical species of the genus *Stantonia* Ashmead, 1904 (Braconidae: Orgilinae), we found two new species of the genus *Bentonia* van Achterberg, 1992. These new species are described below and we provide a key to all known the species. The biology of this genus is still unknown, but the sparse data available for the tribe suggest that they may be endoparasites of larvae of Pyralidae and Tortricidae (van Achterberg, 1987, 1992).

In addition the known distribution of *B. scutellaris* van Achterberg, 1992, and of *B. longicornis* van Achterberg, 1992, is extended, respectively, to Peru and Venezuela.

Abbreviations and used equipment

The following acronyms are used in this paper:

- AEI = American Entomological Intitute, Gainesville, Florida, USA;
- BNHM = British National Museum (Natural History), London, United Kingdom;
- EMEC = Essig Museum of Entomology, University of California, Berkeley, USA;
- IRSNB = Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium;
- MIZA = Museo del Instituto de Zoologia Agrícola "Francisco Fernández Yépez", Maracay, Venezuela;
- RMNH = Nationaal Natuurhistorisch Museum, Leiden, The Netherlands.
- UCR = University of California, Entomology Research Museum, Riverside, California, USA.

Optical observations, drawing and measuring were realized on a Leica MZ8 stereo microscope. Scanning electronic microscopic slides of uncoated specimens were realized on a PHILIPS XL 30CP model at 0.4 mBar.

Systematic Account

For the identification of the Braconidae subfamilies, see van Achterberg (1990, 1993) and for the terminology used in this paper, see van Achterberg (1988, 1994a). For the identification of the genera *Orgilinae* and *Bentonia* species, see van Achterberg (1987, 1992, 1994b).

Bentonia van Achterberg, 1992

Bentonia van Achterberg, 1992: 339.

Key to species of the genus *Bentonia*:

- 1. Median depression of scutellum without posterior carina, sometimes depression more circular, always without median carina and lateral border rounded or weakly carinate; hind coxa, propodeum and metasoma with blackish patches; tegulae largely dark-brown; apex of hind tibia dark-brown; length of ovipositor sheath about times fore wing; valvilli of ovipositor submedially situated; length of vein 3-CU1 of fore wing subequal to vein CU1b; Brazil, French Guiana, Suriname *B. longicornis* van Achterberg, 1992
- Median depression of scutellum carinate posteriorly, sometimes with median carina; hind coxa, propodeum and metasoma without patches; tegulae yellowish; apex of hind tibia variable; length of ovipositor sheath about 0.2 times fore wing; valvilli of ovipositor distinctly behind middle of ovipositor; length of vein 3-CU1 of fore wing variable 2
- 2. Anteriorly scutellum with a median carina in a wide elongate depression; posterior border of temples rounded dorsally, its surface granulate; malar suture weakly impressed or absent; apex of hind tibia blackish; first tergite flattened anteriorly .. 3
- Anteriorly scutellum without median carina, its depression small and circular; dorsally the temples transversally striate near eyes and with a distinct blister; malar suture deep; apex of hind tibia yellow; first tergite with a basal convexity and weakly distally depressed; Mexico *B. xochiquetzalis* spec. nov.
- 3. Metanotum without median carina; vein cu-a of fore wing postfurcal; basally first tergite with a wide depression and laterally with angulate borders; precoxal sulcus distinctly crenulate posteriorly; Peru *B. inca* spec. nov.
- Metanotum with median carina; vein cu-a of fore wing interstitial; basally first tergite with a small depression and lateral border rounded; precoxal sulcus narrowly crenulate posteriorly; Brazil, Peru *B. scutellaris* van Achterberg, 1992

Bentonia longicornis van Achterberg, 1992

Bentonia longicornis van Achterberg, 1992: 341.

Material.— **French Guiana:** 1 ♂ (IRSNB), St.-Laurent-du-Maroni, crique balaté, 21.x-4.xi.1997 (54°2'W - 5°25'N; Malaise trap). **Suriname:** 4 ♀♀ (RMNH), Paramaribo, 4-6.i.1964 (1), Plantation Ma Retraite (swamp forest) (D.C. Geijskes); id., but, 1.iii.1964 (1) (D.C. Geijskes.); Kwatta, 5-8.ii.1964 (1) (D.C. Geijskes, seacoast in *Avicenia* forest); Lelydorp, Sumatra road, 2-5.v.1964 (1) (D.C. Geijskes, sand ridges in

savannah forest) and 1 ♂ (RMNH), Kwatta Zeekust, 15.ii.1964 (Geijskes). **Venezuela** (new record): 1 ♀ and 1 ♂ (MIZA), Cojedes, El Pao, Pilancones, 23-27.i.1995 (9°43'54"N-68°8'31"W - 188 m, proyecto MIZA-DHC) (A. Aleman); 1 ♀ and 1 ♂ (MIZA), same locality but collected 13-16.i.1995.

Bentonia scutellaris van Achterberg, 1992

Bentonia scutellaris van Achterberg, 1992: 343.

Material.— **Peru** (new record): 2 ♀♀ (BMNH), Cuzco (1), Atalaya, Rio Tambo, 29.iii.1954 (J.M. Schunke; B.M. 1961-64) and Chanchamayo (1), 8.viii.1949 (J.M. Schunke; B.M. 1950-559); 1 ♂ (UCR), Tingo Maria, 20-27.i.1968 (A. Garcia & C. Porter). **Brazil**: 1 ♀ (AEI), Santa Catarina, Nova Teutonia (new locality), 25.iii.1954 (E. Plaumann). **Venezuela** (new record): 1 ♀ (MIZA), Cojedes, El Pao, Galeras, 23-28.xi.1994 (9°34'24"N-68°9'7"W - 220 m, proyecto MIZA-DHC)(A. Aleman); 1 ♂ (MIZA), Higuerotal, 24-31.vi.1995 (9°49'27"N-68°2'50"W - 376 m, Malaise trap proyecto MIZA-DHC) (A. Aleman).

Bentonia inca spec. nov.

(figs 6-8, 10-11)

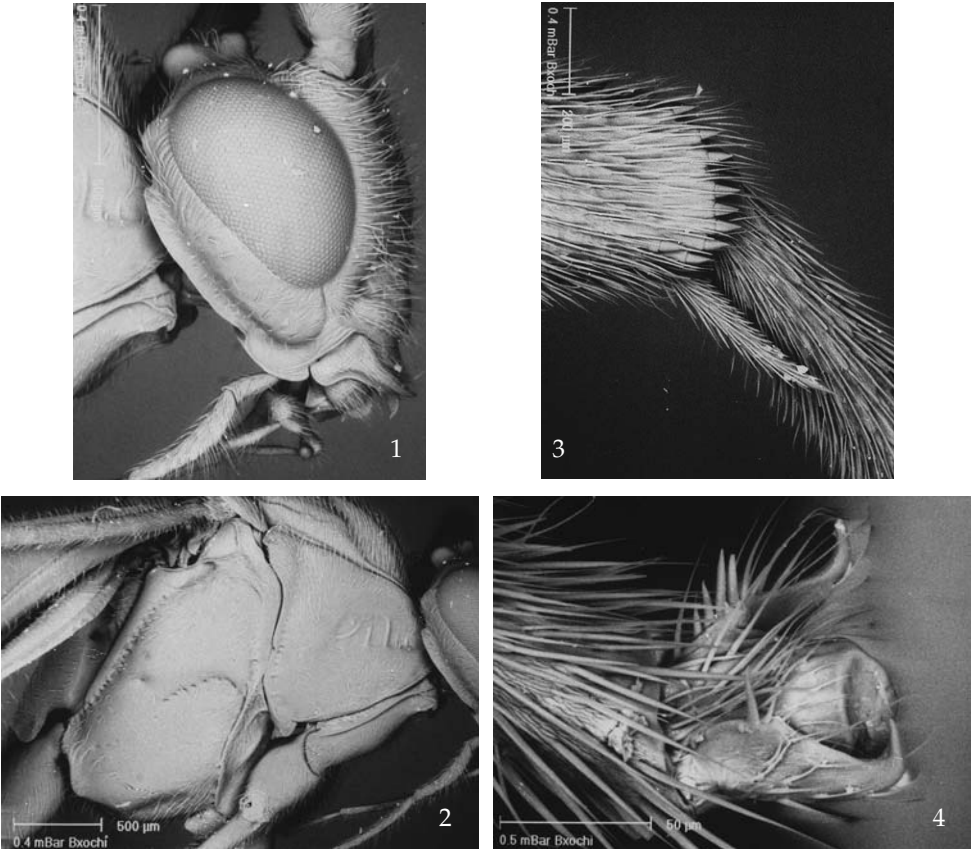
Material.— Holotype, ♀ (BMNH), "Peru, Chanchamayo, 28.vi.1949, J.M. Schunke; B.M. 1950-559".

Holotype, ♀.— Length of body 5.7 mm, of fore wing 6.6 mm.

Head.— Antenna incompletes remaining antennal segments 33, length of antenna 1.6-1.7 times fore wing, length of third segment 1.1 times fourth, length of third and fourth segments 3.6 and 5 times their maximal width, flagellomers (except apically) with two ranks of placodes; in dorsal view length of eyes 2.2 times temple; temple directly narrowed posteriorly, completely granulate-coriaceous and rounded ventrally; gena coriaceous-granulate; malar suture weak (fig. 6); OOL:diameter of ocellus:POL = 5:2:2; frons striate laterally, medially and between antenna socket, smooth medially; vertex flattened near stemmaticum, convex, punctate laterally; frons depressed between antenar sockets and upper part of face with a weak triangular depression; face convex, slightly punctate with long yellowish setae; clypeus convex and punctate; length of malar space 1.1 times basal width of mandible; occipital flange rounded.

Mesosoma.— Length of mesosoma 1.3 times its height; side of pronotum, medially largely crenulate, and remainder smooth; mesopleuron smooth beside precoxal sulcus and weakly punctulate behind; precoxal sulcus reaching posteriorly base of pleural sulcus, largely crenulate; mesosternum rounded ventro-posteriorly; metapleuron sparsely punctate; metapleural flange narrow with a median carina (fig. 7); median carina of metanotum absent; interspaces between punctures on mesoscutum wider than their diameter; middle lobe of mesoscutum with a weak median carina; notauli punctate and strongly impressed anteriorly; scutellum with small circular depression carinate posteriorly; propodeum with anterior median carina, posteriorly with few wrinkles arch-like shaped, laterally smooth with sparse punctuation, with some long setae.

Legs.— Hind coxa with strong parallel wrinkles from middle to apex; length of femur, tibia, basitarsus of hind leg 5.4, 9.5, 12 times their width, respectively; length of tibial spurs 0.5 and 0.3 times basitarsus; in lateral view hind tibia weakly constrict-



Figs 1-4, *Bentonia xochiquetzalis* spec. nov., ♀, holotype: 1, head, lateral view; 2, mesopleuron, lateral view; 3, apex of hind tibia; 4, hind tarsals claws.

ed medially; numerous preapical pegs on hind tibia which do not reach tibial spurs (fig. 8).

Metasoma.— Length of first tergite 3.2 times its apical width; surface of first tergite smooth and shiny, with sparse setosity, anteriorly flattened and its sides basally angular (fig. 10); spiracles protruding; length of the second tergite 1.8 times its apical width; second tergite with a clear medio-basal convexity; second suture smooth, straight; ovipositor sheath less than 0.1 times fore wing; valvilli situated behind middle of ovipositor.

Wings (fig. 11).— Fore wing: r:SR1 = 13:58; 2-SR:r-m = 13:10; 1-SR+M somewhat sinuated; cu-a postfurcal; excepted basally CU1a pigmented and reaching border of wing; 3-CU1 longer than CU1b. Hind wing: 2-M pigmented; membrane largely glabrous basally.

Colour.— Brownish-yellow; pronotum, pterostigma, tegulae, legs excepted hind tibia apically, base of mid and hind tarsi, yellowish; stemmaticum, flagellum largely, posterior part of pedicellus, hind tibia apically, apex of mid and hind basitarsus, tarsi and apical patch of fore wing dark-brown; stripe on outer side of scapus blackish;

remainder of wing membrane hyaline.

Etymology.— From the name of the Incas' civilisation.

Bentonia xochiquetzalis spec. nov.
(figs 1-5, 9)

Material.- Holotype, ♀ (EMEC), " Mexico, Ver.[acruz], 11 mi.[= miles] N. [of] Cordoba, 2.vii.1962, D.H. Janzen ".

Holotype, ♀.— Length of body 7.5 mm, of fore wing 7.6 mm.

Head.— Antennal segments 59, length of antenna 1.6 times fore wing, length of third segment 1.1 times the fourth, length of third, fourth and penultimate segment 3.5, 3.2 and 3 times their maximal width, flagellomers (except apically) with two ranks of placodes, apical segment 3 times its maximal width; length of maxillar palp 1.4 times height of head; in dorsal view length of eyes 2.5 times temple; temple directly narrowed posteriorly, striate transversally near eyes, dorsally with a blister in lateral view (fig. 1); OOL:diameter of ocellus:POL = 7:3:2; frons laterally and between antennal sockets striate, and medially smooth; vertex flattened near stemmaticum, convex, punctate laterally; frons depressed between antennal sockets and the upper part of the face with a weak triangular depression; face convex, slightly punctate with long yellowish setae; clypeus convex and slightly punctate; length of malar space equal to basal width of mandible; gena rounded ventrally; malar suture deep (fig. 1); occipital flange rounded.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum with large crenulae medially, remainder smooth; mesopleuron smooth beside precoxal sulcus and weakly punctulate behind; posterior part of precoxal sulcus indistinctly punctate, strongly punctate anteriorly; mesosternum slightly angulate ventro-posteriorly; metapleuron sparsely punctate; metapleural flange flattened (fig. 2); median carina of metanotum present; interspace between punctures on mesoscutum wider than their diameter; middle lobe of mesoscutum with a weak median carina; notauli punctate and strongly impressed anteriorly; scutellum with small circular depression with a semi-circular carina posteriorly; surface of propodeum posteriorly with some coarse wrinkles, laterally smooth with sparse punctures, and some long setae.

Legs.— Hind coxa with strong parallel wrinkles from middle to apex of coxae; length of femur, tibia, basitarsus of hind leg 5.9, 6.2, 7.4 times their width, respectively; length of tibial spurs 0.6 and 0.3 times basitarsus; in lateral view hind tibia slightly constricted medially; numerous apical pegs on hind tibia which reach tibial spurs (fig. 3); inner tarsal claws with less strong bristles basally than the outer ones (2 versus 5) (fig. 4).

Metasoma.— Length of first tergite 2.9 times its apical width; surface of first tergite smooth and shiny, with some sparse setosity, anteriorly distinctly convex, distally with a weak longitudinal depression medially; spiracles protruding (fig. 5); length of second tergite 2.5 times its apical width; second tergite with a clear medio-basal convexity and slightly depressed medio-longitudinally; second suture smooth, straight; ovipositor sheath 0.12 times fore wing, weakly spatulate apically; valvilli of ovipositor situated behind middle of ovipositor.

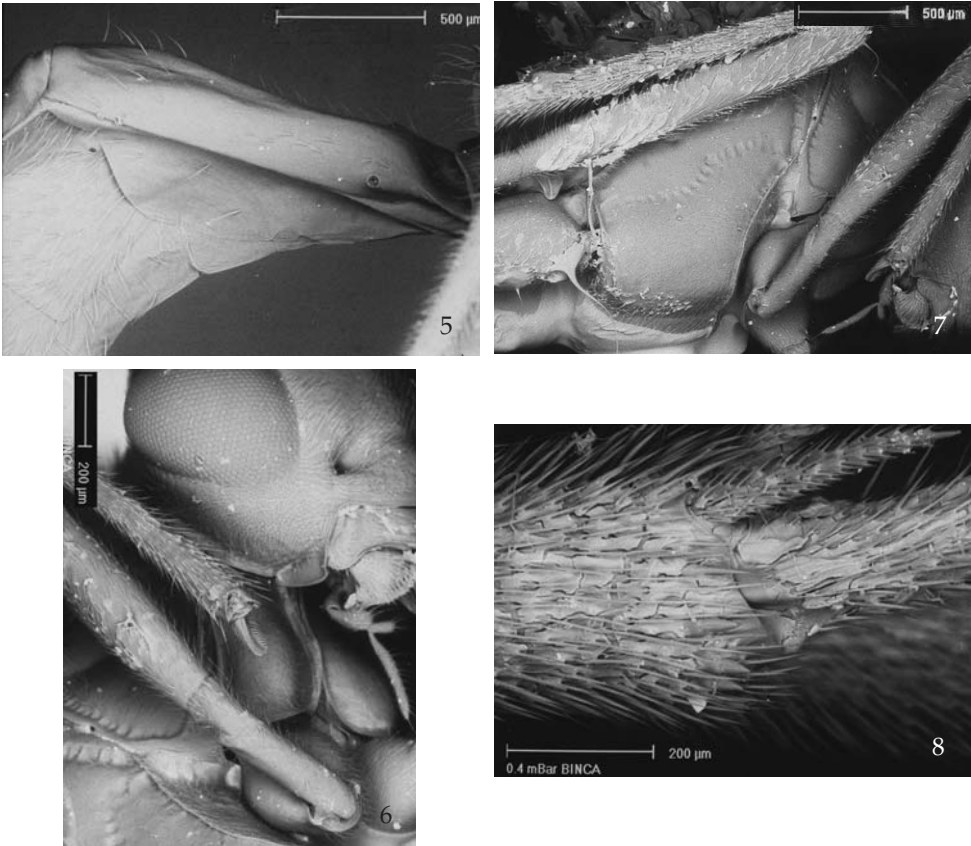


Fig 5, *Bentonia xochiquetzalis* spec. nov., ♀, holotype, dorso-lateral view of first tergite. Figs 6-8, *Bentonia inca* spec. nov., ♀, holotype: 6, head, ventro-lateral view; 7, mesopleuron, lateral view; 8, apex of hind tibia.

Wings (fig. 9).— Fore wing: r:SR1 = 17:60; 2-SR:r-m = 20:8; cu-a interstitial; 1-SR+M somewhat sinuate; excepted basally CU1a pigmented and reaching border of wing; 3-CU1 longer than CU1b. Hind wing: 2-M pigmented; membrane largely glabrous basally.

Colour.— Brownish-yellow; pronotum, pterostigma, tegulae, veins C+SC+R of fore and hind wings, apex of hind and middle trochantellus, apex of hind femur and tibia and ovipositor sheath yellowish; stemmaticum, flagellum largely, posterior part of pedicellus, inconspicuous subapical patch on first tergite, ultimate tarsal segments of legs, apex of hind basitarsus and following tarsi, remaining veins and large apical patch of fore wing dark-brown; stripe on outer side of scapus, carina of propodeum, first tergite medially and third-fifth tergites apically blackish; remainder of wing membrane hyaline.

Etymology.— From the name of the Aztec goddess of flowers.

Remark.— In the material of the MIZA collections we found a male specimen of *Bentonia* labelled "Venezuela, Carabobo", "Acueducto San Diego, 26.IX.1991 (450 m)",

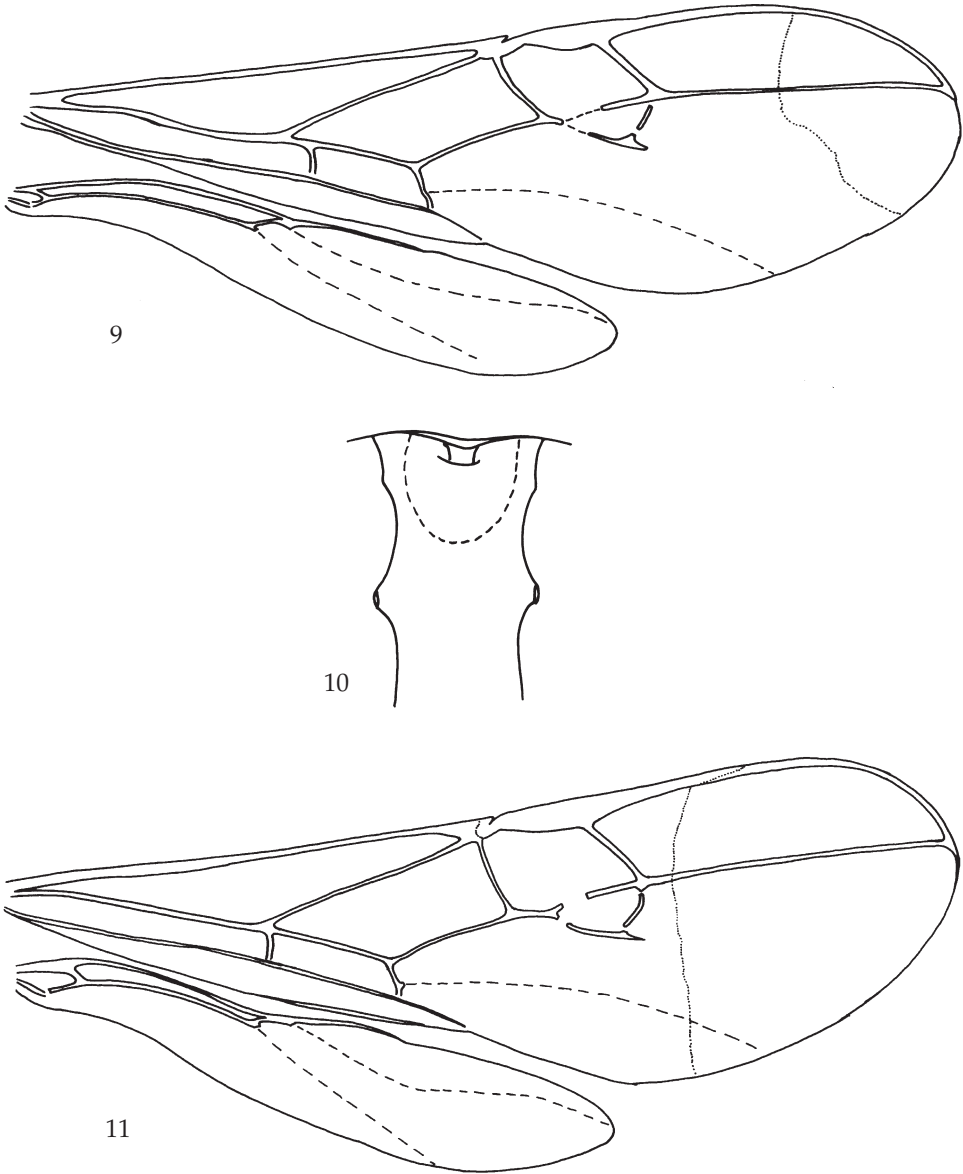


Fig 9, *Bentonia xochiquetzalis* spec. nov., ♀, holotype, wings. Figs 10-11, *Bentonia inca* spec. nov., ♀, holotype: 10, base of first tergite, dorsal view; 11, wings.

“J. Clavijo & A. Chacon cols.”. Originally, we expected this to be the unknown male of *B. xochiquetzalis* spec. nov. until we examined the variation of similar characters between the males and females specimens of closely related species as *B. longicornis* and *B. scutellaris*. In these species we have observed that the colour of wings, of veins, of antenna and the position of the spines/pegs on the mid and hind tibia are very

constant. These facts with the lack of the blister on the top of the temple for our specimens have convinced us that it is a new species. Moreover, we prefer to postpone its description till a female becomes available.

This new species is very similar to *B. xochiquetzalis* spec. nov. but it can be separated as follows:

<i>B. xochiquetzalis</i> spec. nov. (♀)	<i>B. spec. nov.</i> (♂)
Top of the temples with a blister	Top of the temples without a blister
Mid tibia without spines on outer face	Mid tibia with several spines on its outer face
Hind tibia with a line of apical pegs	Hind tibia with a square group of 4 apical pegs
Apical patch on fore wings wide	Apical patch on fore wings smaller (as <i>B. longicornis</i>)
Vein C+SC+R and pterostigma brownish-yellow	Vein C+SC+R and pterostigma brownish-black
Antenna brownish-black basally	Antenna completely black

Acknowledgements

We wish to thank Dr P. Grootaert (Brussels) and Dr C. Gaspar (Gembloux) for their suggestions and their help in our research; Dr D. Wahl (Gainesville); Mr D. Notton (London), Dr R.L. Zuparko (Berkeley); Mr J.L. Garcia (Maracay) and Dr S. Frommer (Riverside) for the loan of specimens of *Bentonia*. We thank also Dr C. van Achterberg (Leiden) for his loan and suggestions. The first author thanks Mr J.-M. Vanest and Mr D. van der Wal (Philips Electron Optics, Bruxelles) for their help in the realisation of the scanning electron micrographs. We also offer gratitude to P. Degreve and J. Cillis, J. Bortels and C. Wonville for their help in the bibliographic search and for the technical support. We thank M. Chaput for reviewing the text.

References

- Achterberg, C. van, 1987. Revisionary note on the subfamily Orgilinae (Hymenoptera, Braconidae).— Zool. Verh. Leiden 242: 1-111.
- Achterberg, C. van, 1988. Revision of the subfamily Blacinae Foerster (Hymenoptera: Braconidae).— Zool. Verh. Leiden 249: 1-324.
- Achterberg, C. van, 1990. Illustrated key to the subfamilies of the Holarctic Braconidae (Hymenoptera, Ichneumonoidea).— Zool. Med. Leiden 64: 1-20.
- Achterberg, C. van, 1992. *Bentonia* gen. nov. (Hymenoptera: Braconidae: Orgilinae) from Brazil.— Zool. Med. Leiden 66: 339-344.
- Achterberg, C. van, 1993. Illustrated key to the subfamilies of the Braconidae (Hymenoptera, Ichneumonoidea).— Zool. Verh. Leiden 283: 1-189.
- Achterberg, C. van, 1994a. New morphological terms.— Ichnews 14: 5.
- Achterberg, C. van, 1994b. Two new genera of the tribe Orgilini Ashmead (Hymenoptera: Braconidae: Orgilinae).— Zool. Med. Leiden 68: 173-190.

Received: 9.ix.1997

Accepted: 15.xii.1997

Edited: C. van Achterberg