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## The first troglomorphic species of the genus *Phrynus* Lamarck, 1801 (Amblypygi: Phrynidae) from Mexico

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### Abstract

A new troglomorphic species, *Phrynus perrii* sp. nov., is described from two adult females from Cueva del Naranjo, Municipio Cintalapa, Chiapas, Mexico. This is the first continental record of a troglomorphic *Phrynus* species, and the second troglomorphic species of the genus. With the description of this species, in Mexico there are ten extant species, plus one fossil of the genus *Phrynus*, and it is the seventh species of troglobitic whip spiders from Mexico, making it the country with the highest richness of amblypygids species worldwide.

**Key words:** whip spiders, *Phrynus perrii* sp. nov., troglomorphic, Chiapas

### Resumen

Se describe una nueva especie troglomórfica, *Phrynus perrii* sp. nov., con base a dos hembras adultas de la Cueva del Naranjo, Municipio Cintalapa, Chiapas, México. Este es el primer *Phrynus* troglomórfico continental y la segunda especie troglomórfica para el género. Con la descripción de ésta, en México hay 10 especies, más una especie fósil del género *Phrynus*, además es la séptima especie de tenderapos troglobios para México, siendo el país con la mayor riqueza de especies de ambliptígidos en el mundo.

**Palabras clave:** tenderapos, *Phrynus perrii* sp. nov., troglomórfico, Chiapas

### Introduction

The arachnid order Amblypygi has a low number of species in comparison with other arachnids such as mites, spiders, scorpions or harvestmen. It comprises 158 species divided in five families and 17 genera, distributed in the tropical and sub-tropical regions of the world (Harvey, 2007). Amblypygi specimens are seldom collected, because they are predominantly nocturnal and often remain hidden in difficult to search places such as crevices among rocks, tree-trunks and logs, or are found in caves where they are hard to access, to observe, and collect (Weygoldt, 2000).

Almost half of the species of amblypygids are known from caves, of these, the vast majority are troglophiles (Quintero, 1981; Cokendolpher & Sissom, 2001; Racovitza, 2006). In continental America, there are three of the five existing families: Charinidae is circum-tropical; Phrynichidae represented by a single genus in Brazil; and Phrynidae distributed exclusively in the Americas (except *Phrynus exsul*) (Harvey, 2003). Only Charinidae and Phrynidae have troglomorphic species in the new world, as is the case of *Charinus* Simon, 1892 “sensu lato”, *Paraphrynus* Moreno, 1940 and *Phrynus* Lamarck, 1801. One of the first troglobites known from the Americas are two species: *Speleophrynus tronchonii* Ravelo, 1975 and *Speleophrynus bordoni* Ravelo, 1977 from caves in Venezuela, presently in the genus *Charinus*.

## Key to troglomorphic species of Phryninae:

1. Dorsal margin of pedipalp patella with one spine between the two longest spines (*Phrynus*) . . . . . 2
- Dorsal margin of pedipalp patella with two spines between the two longest spines (*Paraphrynus*) . . . . . 3
2. Ocular tubercle reduced, with black pigmentation; chelicera with three teeth on external margin of retrolateral surface (Pinar del Rio, Cuba) . . . . . *Phrynus noeli*
- Nearly obsolete ocular tubercle is the same color as the carapace (pale brown); chelicera with one or two teeth on external margin of retrolateral surface (Chiapas, Mexico) . . . . . *Phrynus perrii* sp. nov.
3. Median eyes reduced or absent, but at least lateral eyes present . . . . . 4
- All eyes entirely missing and lacking ocular tubercle (Yucatán, Mexico) . . . . . *Paraphrynus reddelli*
4. Median eyes reduced but present; ocular tubercle nearly obsolete . . . . . 5
- Median eyes and ocular tubercle absent (San Luis Potosí, Mexico) . . . . . *Paraphrynus velmae*
5. Pedipalp tarsus lacking such a dorso-lateral spine . . . . . 6
- Pedipalp tarsus with a small dorso-lateral spine (Quintana Roo and Yucatán, Mexico) . . . . . *Paraphrynus chaemool*
6. Pedipalp Fv1 spine slightly curved or only hook shaped at the apex . . . . . 7
- Pedipalp Fv1 spine straight (Tamaulipas, Mexico) . . . . . *Paraphrynus baeops*
7. Pedipalp Fv1 spine slightly curved full length; anterior edge of carapace strongly bilobed; basal segment of chelicera with one tooth on external margin of retrolateral surface (Tabasco, Mexico) . . . . . *Paraphrynus chiztun*
- Pedipalp Fv1 spine curved only of apex (hook shaped); anterior edge of carapace moderately bilobed; basal segment of chelicera with two teeth on external margin of retrolateral surface, the distal tooth slightly smaller and somewhat blunt (Oaxaca, Mexico) . . . . . *Paraphrynus grubbsi*

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## Literature cited

- Armas, L.F.d. (2006a) Los ambliopígididos o tenderapos de México (Arachnida: Amblypygi). *Boletín de la Sociedad Entomológica Aragonesa*, 39, 345–359.
- Armas, L.F.d. (2006b) Sinopsis de los ambliopígididos Antillanos (Arachnida: Amblypygi). *Boletín de la Sociedad Entomológica Aragonesa*, 38, 223–245.
- Armas, L.F. (2012) Nueva especie de *Paraphrynus* Moreno, 1940 (Amblypygi: Phrynidae) de México y el suroeste de los EE.UU. de América. *Revista Ibérica de Aracnología*, 21, 27–32.
- Armas, L.F. (2014) Los Amblypygios de Cuba (Arachnida: Amblypygi). *Revista Ibérica de Aracnología*, 24, 29–51.
- Armas, L.F. & Perez, A. (1994) Description of the first troglobitic species of the genus *Phrynus* (Amblypygi: Phrynidae) from Cuba. *Avicennia*, 1, 7–11.
- Armas, L.F., Guzmán, A.A. & Francke, O.F. (2014) Nueva especie de *Phrynus* (Amblypygi: Phrynidae) de México. *Revista Ibérica de Aracnología*, 25, 03–07.
- Baptista, R.L.C. & Giupponi, A.P.L. (2002) A new troglomorphic *Charinus* from Brazil (Arachnida: Amblypygi: Charinidae). *Revista Ibérica de Aracnología*, 6, 105–110.
- Baptista, R.L.C. & Giupponi, A.P.L. (2003) A new troglomorphic *Charinus* from Minas Gerais state, Brazil (Arachnida: Amblypygi: Charinidae). *Revista Ibérica de Aracnología*, 7, 79–84.
- Ballesteros, J.A. (2006) *Catálogo de ambliopígididos, uropígididos y solífugos (Arachnida) de la Colección Nacional de Arácnidos (CNAN)*. Tesis de Licenciatura. Escuela Nacional de Ciencias Biológicas, Instituto Politécnico Nacional. México, D.F., 100 pp.
- Cokendolpher, J.C. & Sissom, W.D. (2001) A new troglobitic *Paraphrynus* from Oaxaca (Amblypygi: Phrynidae). *Texas Memorial Museum, Speleological Monographs*, 5, 17–23.
- Harvey, M.S. (2003) *Catalogue of the smaller arachnid orders of the world: Amblypygi, Uropygi, Schizomida, Palpigradi,*

- Ricinulei and Solifugae*. CSIRO Publishing. Collingwood, Victoria, Australia, 385 pp.
- Harvey, M.S. (2007) The smaller arachnid orders: diversity, descriptions and distributions from Linnaeus to the present (1758 to 2007). *Zootaxa*, 1668, 367–380.
- Oliveira, A.C., Giupponi, A.P.L. & Lopes, R. (2013) A new species of *Charinus* Simon, 1892 from northeastern Brazil with comments on the potential distribution of the genus in Central and South America (Arachnida: Amblypygi:Charinidae). *Zootaxa*, 3737 (4), 488–500.  
<http://dx.doi.org/10.11646/zootaxa.3737.4.9>
- Quintero, D. (1981) The Amblypygid genus *Phrynus* in the Americas (Amblypygi, Phrynidae). *Journal of Arachnology*, 9, 117–166.
- Racovitza, E.G. (1907) Les problèmes biospéologiques. Biospeleologica I. *Archives Zoologiques Expé. et Génée.*, 6, 371–488.
- Racovitza, E.G. (2006) Essay on biospelological problems: French, English, and Romanian. [Facsimile of the publication *Essai sur les problèmes biospéologiques* (1907), translated by D. C. Culver & O. Moldovan] Institut de Speologie “Emil Racovitza”, Cluj-Napoca, Romania. [total page number unknown]
- Rowland, J.M. (1973) Two new troglobitic Amblypygida of the genus *Tarantula* from Mexican caves (Arachnida). *Bulletin of the Association for Mexican Caves Studies*, 5, 123–128.
- Shultz, J.W. (1999) Muscular anatomy of a whip spider, *Phrynus longipes* (Pocock) (Arachnida: Amblypygi), and its evolutionary significance. *Zoological Journal of the Linnean Society*, 126, 81–116.  
<http://dx.doi.org/10.1111/j.1096-3642.1999.tb00608.x>
- Volschenk, E.S. & Prendini, L. (2008) *Aops oncodactylus*, gen. et sp. nov., the first troglobitic urodacid (Urodacidae: Scorpiones), with a re-assessment of cavernicolous, troglobitic and troglomorphic scorpions. *Invertebrate Systematics*, 22, 235–257.  
<http://dx.doi.org/10.1071/IS06054>
- Weygoldt, P. (2000) *Whip Spiders (Chelicerata: Amblypygi) Their Biology, Morphology and Systematics*. Apollo Books, Stenstrup, Denmark, 164 pp.