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**New records and description of fifty-four new species of aquatic beetles in the genus *Hydraena* Kugelann from South America (Coleoptera: Hydraenidae)**

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## Abstract

The South American species of the water beetle genus *Hydraena* Kugelann, 1794, are revised, based on the study and databasing of 2,418 specimens. New collection records are provided for 14 previously described species, and 54 new species are described. The South American fauna now comprises 82 species, only three of which are also known to be present outside of South America. Two new species groups are described, and several new species complexes are diagnosed. A neotype is designated for *Hydraena paraguayensis* Janssens. High resolution digital images of the holotypes of new species are presented, as

are images of the primary types of 18 previously described species (online versions in color). Geographic distributions of all South American *Hydraena* are mapped. Male genitalia, representative female terminal abdominal segments and representative spermathecae are illustrated. New species of *Hydraena* are: *H. altiphila* (Venezuela, Rio Milla at Merida Zoo); *H. amazonica* (Peru, Iquitos); *H. ampla* (Ecuador, Quevedo, 66 km E); *H. atroscentilla* (Ecuador, Nono, 15.1 km NW); *H. beniensis* (Bolivia, 40 km E San Borja, Estacion Biologica Beni, Palm Camp at Rio Curiraba); *H. boliviana* (Bolivia, 40 km E San Borja, Estacion Biologica Beni, Palm Camp at Rio Curiraba); *H. buscintilla* (Suriname, Sipaliwini District, Camp 3, Wehepai); *H. challeti* (Colombia, 8.2 km NE Guarne on Hwy to Bogota); *H. cherylbarrae* (Venezuela, Puerto Ayacucho (40 km S), El Tobogan, Cano Coromoto); *H. clinodorsa* (Bolivia, Yungas Val.); *H. clystera* (Bolivia, Chulumani); *H. cochabamba* (Bolivia, Cochabamba, 105 km E Yungas, nr. Rio Carmen Mayu (Cochabamba - Villa Tunari Rd.)); *H. concepcionica* (Paraguay, Est. San Luis); *H. cordispina* (Peru, Parque Manu, Pakitza, Trocha Dos, c.53); *H. curvosa* (Brazil, Para, Rio Xingu Camp, Altamira (ca 60 km S), 1st jungle stream on trail 4); *H. d-concava* (Peru, Quita Calzone Rd., at km 164); *H. dariensis* (Colombia, Rio Atrato, Sautata); *H. diffusa* (Paraguay, Est. San Luis); *H. duohamata* (Venezuela, Cerro de la Neblina, 1.5 km S Basecamp); *H. ecuadormica* (Ecuador, Quevedo); *H. fasciola* (Ecuador, oil production platform "Villano B"); *H. flagella* (Paraguay, Mbocayaty, Arroyo Gervasio); *H. hintoni* (Brazil, Porto Velho); *H. kellymilleri* (Venezuela, just S. of Comunidad Porvenir); *H. liliana* (Argentina, Punta Lara); *H. loripes* (Venezuela, Stream along Rio Sipapo, S. Comunidad Cano Gato); *H. manabica* (Ecuador, 38 km E. of Portoviejo); *H. mauriciogarciai* (Venezuela, Perija National Park, Tukuko, Rio Manantial); *H. mintrita* (Venezuela, stream nr. San Antonio); *H. multiloba* (Bolivia, 40 km E. San Borja, Estacion Biologica Beni, Palm Camp at Rio Curiraba); *H. multispina* (Peru, Quita Calzone, at km 164); *H. nanoscintilla* (Brazil, Cuiabá, 66 km E Serra, MT); *H. neblina* (Venezuela, Cerro de la Neblina); *H. novacula* (Peru, Buenos Aires, at km 132); *H. pantanalensis* (Brazil, Rio Bento Gomes (Pantanal); H. Quelle, Quellbach, Campo Alegre, II); *H. peckorum* (Argentina, 17 km N La Caldera, Alto de la Sierra); *H. pedroaguilerai* (Ecuador, Puyo, Santa Clara, Rio Llaudio Chico); *H. propria* (Ecuador, Paquisha, 20 km SE); *H. punctilata* (Brazil, Est. [Esti-rao] Do Ecuador); *H. reverberata* (Venezuela, Puerto Ayacucho (40 km S.), at Tobogan); *H. scintillamima* (Peru, Celendin area); *H. scintillapicta* (Suriname, Sipaliwini District, Camp 3, Wehepai; 2010 CI-RAP Survey); *H. scintillarca* (Peru, Celendin area); *H. shorti* (Venezuela, Perija National Park, Tukuko, Rio Manantial); *H. spatula* (Venezuela, NW Humocaro Bajo); *H. steineri* (Bolivia, 40 km E. San Borja, Estacion Biologica Beni, Palm Camp at Rio Curiraba); *H. stellula* (Ecuador, Santo Domingo, 79.6 km E); *H. takutu* (Guyana, Takutu Mountains); *H. tobogan* (Venezuela, Puerto Ayacucho (40 km S), at Tobogan); *H. tridigita* (Peru, Celendin area); *H. umbolenta* (Paraguay, Rio Tebicuarymi); *H. unita* (Brazil, Rio Bento Gomes, Pantanal); *H. venezuela* (Venezuela, Los Pijiguaos); *H. xingu* (Brazil, Rio Xingu Camp, Altamira, ca 60 km S).

**Key words:** Coleoptera, Hydraenidae, *Hydraena* Kugelann, new species, South America, aquatic insects, aquatic microhabitats, holotype digital images

## Introduction

The genus *Hydraena* Kugelann in South America was comprehensively revised a little more than 30 years ago, as part of a monograph on the Hydraenidae of the New World (Perkins 1980). In that paper, 20 species of *Hydraena* were described or redescribed. In the intervening years I have been accumulating new material, which is reported in this paper. A total of 54 new species are described herein, and new records and/or updated male genitalia figures and digital images of primary types are provided for 14 of the previously described species. Since the publication of my monograph only two new species of South American *Hydraena* have been described: *H. delvasi* Delgado & Collantes 1996 (Colombia), and *H. nelsonmandelai* Makhan 2008 (Suriname).

This paper is based on the study and databasing of 2,418 specimens. In total, 82 species of *Hydraena* are now known from South America. Only three of these species are known to also be present outside of South America. The total number of collecting localities/events known (and databased) for *Hydraena* is now 226. This number is still quite small, and the widely separated distributions of many of the collecting localities (Fig. 192) strongly suggest that many more species of *Hydraena* remain to be discovered. This prospect is also strongly indicated by the many rather large morphological gaps separating species.

## Distribution Patterns

As currently known, *Hydraena* is distributed in a somewhat C-shaped pattern, from Suriname to northern South America, then southward in the Andes to northern Argentina and eastward to southeastern Brazil (Fig. 192). No specimens have been collected in Chile, although many collections of the hydraenid genus *Gymnochthebius* have been made there (Perkins 1980). The huge Amazon basin is almost totally devoid of collecting records. Only two species, *H. anaphora* (Fig. 199) and *H. hyalina* (Fig. 204) are known to be distributed both north and south of the