



Zootaxa 3758 (1): 001–092  
www.mapress.com/zootaxa/

Copyright © 2014 Magnolia Press

# Monograph

ISSN 1175-5326 (print edition)

**ZOOTAXA**

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.3758.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:63F695AA-891F-48D2-AE96-7492016B9590>

# ZOOTAXA

3758

## **A revision of the water beetle genus *Hydraena* Kugelann for southern Africa (Coleoptera: Hydraenidae)**

PHILIP D. PERKINS

*Department of Entomology, Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138 USA.  
E-mail: [perkins@oeb.harvard.edu](mailto:perkins@oeb.harvard.edu).*



Magnolia Press  
Auckland, New Zealand

*Accepted by Floyd Shockley: 25 Nov. 2013; published: 29 Jan. 2014*

Philip D. Perkins

**A revision of the water beetle genus *Hydraena* Kugelann for southern Africa  
(Coleoptera: Hydraenidae)**

(*Zootaxa* 3758)

92 pp.; 30 cm.

29 Jan. 2013

ISBN 978-1-77557-324-1 (paperback)

ISBN 978-1-77557-325-8 (Online edition)

FIRST PUBLISHED IN 2014 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: [zootaxa@mapress.com](mailto:zootaxa@mapress.com)

<http://www.mapress.com/zootaxa/>

© 2014 Magnolia Press

All rights reserved.

No part of this publication may be reproduced, stored, transmitted or disseminated, in any form, or by any means, without prior written permission from the publisher, to whom all requests to reproduce copyright material should be directed in writing.

This authorization does not extend to any other kind of copying, by any means, in any form, and for any purpose other than private research use.

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

## Table of contents

Abstract	4
Introduction	4
Distributions and microhabitats	4
Methods and conventions	5
<i>Hydraena</i> Kugelann, 1794	6
<i>Hydraena</i> ( <i>Hydraenopsis</i> ): <i>Cooperi</i> Group	6
<i>Hydraena cooperi</i> Balfour-Browne	7
<i>Hydraena cooperoides</i> , new species	11
<i>Hydraena capensis</i> , new species	14
<i>Hydraena genumorpha</i> , new species	15
<i>Hydraena reflectiva</i> , new species	18
<i>Hydraena</i> ( <i>Hydraenopsis</i> ): <i>Namibiensis</i> Group	19
<i>Hydraena namibiensis</i> , new species	19
<i>Hydraena multimurata</i> , new species	22
<i>Hydraena pisciforma</i> , new species	25
<i>Hydraena natiforma</i> , new species	27
<i>Hydraena uniforma</i> , new species	29
<i>Hydraena elephanta</i> , new species	31
<i>Hydraena injectiva</i> , new species	34
<i>Hydraena profunda</i> , new species	36
<i>Hydraena</i> ( <i>Hydraenopsis</i> ): <i>Clavicula</i> Group	38
<i>Hydraena clavicula</i> , new species	38
<i>Hydraena zimbabwensis</i> , new species	40
<i>Hydraena mpumalanga</i> , new species	43
<i>Hydraena caprivica</i> , new species	44
<i>Hydraena vadosa</i> , new species	47
<i>Hydraena</i> ( <i>Hydraenopsis</i> ): <i>Accurata</i> Group	50
<i>Hydraena accurata</i> Orchymont	51
<i>Hydraena neoaccurata</i> , new species	56
<i>Hydraena</i> ( <i>Hydraenopsis</i> ) ( <i>incertae sedis</i> )	59
<i>Hydraena humanica</i> , new species	59
<i>Hydraena armatura</i> , new species	61
<i>Hydraena tiara</i> , new species	64
<i>Hydraena nomenipes</i> , new species	65
<i>Hydraena habitiva</i> , new species	68
<i>Hydraena favulosa</i> , new species	69
<i>Hydraena biseptosa</i> , new species	70
<i>Hydraena</i> ( <i>incertae sedis</i> ): <i>Monikae</i> Group	73
<i>Hydraena monikae</i> Jäch & Diaz	75
<i>Hydraena duodecimata</i> , new species	76
<i>Hydraena bicarina</i> , new species	77
<i>Hydraena sebastiani</i> , new species	81
Acknowledgments	82
References	92

## Abstract

The southern African species of the water beetle genus *Hydraena* Kugelann, 1794, are revised. Twenty-eight new species are described, and redescriptions and new collection records are given for three previously described species, based on the examination and databasing of 11,534 specimens from 488 localities/events. Male genitalia are illustrated, and high resolution habitus images of the holotypes are provided. Distribution maps are given for the 31 species of *Hydraena* now known from southern Africa, including Namibia, South Africa, Lesotho, Botswana, Zimbabwe, and the extreme southern part of Angola. New species of *Hydraena* are: *H. armatura* (Zimbabwe: Tributary stream of the Mutoragundu River); *H. biseptosa* (South Africa: Mpumalanga Province, Soutpansberg, Entabeni); *H. capensis* (South Africa: Eastern Cape Province, Chapman's Bay); *H. caprivica* (Namibia: East Caprivi: Katima Mulilo); *H. clavicula* (South Africa: Mpumalanga Province, Uitsuk); *H. cooperoides* (Namibia: Naukluft River); *H. duodecimata* (South Africa: Northern Cape Province, Richtersveld, Oemsberg); *H. elephanta* (Angola: Altoplano, Ongueria); *H. favulosa* (Zimbabwe: Matapos National Park); *H. genumorpha* (South Africa: KwaZulu-Natal Province, Karkloof Grassveld); *H. habitiva* (South Africa: Mpumalanga Province, Nelshoogte); *H. humanica* (South Africa: Mpumalanga Province, Blyderiver Canyon); *H. injectiva* (South Africa: Mpumalanga Province, Nelshoogte); *H. mpumalanga* (South Africa: Mpumalanga Province, Soutpansberg, Entabeni); *H. multimurata* (South Africa: Mpumalanga Province, Kruger Nat. Pk., Letaba River); *H. namibiensis* (Namibia: C. Namib desert, Numis Wasser); *H. natiforma* (South Africa: Free State Province, Kruger Nat'l Park, Pretariuskop); *H. neoaccurata* (South Africa: Mpumalanga Province, Nelshoogte); *H. nomenipes* (South Africa: Eastern Cape Province, S. coast, Dwesa forest reserve); *H. pisciforma* (South Africa: Mpumalanga Province, Kruger National Park, Skukuza, Sabie River); *H. profunda* (South Africa: Mpumalanga Province, God's Window); *H. reflectiva* (South Africa: Eastern Cape Province, S. coast, Dwesa forest reserve); *H. sebastiani* (South Africa: Western Cape Province, Groot Toren farm); *H. tilara* (South Africa: Mpumalanga Province, Vaal River where crossed by Ermelo-Lake Chrissie Road); *H. uniforma* (Namibia: Brandberg, Wasserfallflache); *H. vadosa* (South Africa: Eastern Cape Province, Amatole, Pirie Forest); *H. zimbabwensis* (Zimbabwe: Matapos National Park).

**Key words:** Coleoptera, Hydraenidae, *Hydraena* Kugelann, new species, aquatic insects, aquatic microhabitats, holotype digital images, southern Africa, Angola, Botswana, Lesotho, Namibia, South Africa, Zimbabwe

## Introduction

This is the tenth contribution in a series of papers revising afrotropical Hydraenidae. Previous papers have included a general taxonomic work on the fauna of southern Africa (Perkins & Balfour-Browne 1994), a comprehensive morphological and systematic study of the family, including African taxa (Perkins 1997), revisionary studies of the genera *Pneuminion* Perkins (Perkins 2004a), *Nucleotops* Perkins & Balfour-Browne (Perkins 2004b), *Discozantaena* Perkins & Balfour-Browne (Perkins 2005a), *Coelometopon* Janssens (Perkins 2005b), a paper describing new species of, and documenting new collecting records for, Prosthetopinae (Perkins 2008), a comprehensive revision of the tribe Parhydraenini (Perkins 2009), and a revision of the genus *Ochthebius* (Perkins 2011). The remaining revisions of *Aulacochthebius* Kuwert and *Limnebius* Leach are nearing completion. More than 53,300 specimens have been identified and databased, from 1,384 localities/events, representing 224 hydraenid species. Revisions include digital images of primary types.

In this paper, 28 new species of *Hydraena* Kugelann, 1794, from southern Africa are described, and new collection records are given for the three previously described species. Distribution maps are provided for the 31 species of *Hydraena* now known from southern Africa. The geographical area includes Namibia, South Africa, Lesotho, Botswana, Zimbabwe, and the extreme southern part of Angola (Fig. 64). In total, 11,534 specimens of *Hydraena* have been identified and databased, from 488 localities/events.

## Distributions and microhabitats

Members of *Hydraena*, in southern Africa, are generally found at the margins of freshwater habitats, including streams and ponds, usually where the microhabitats are sandy/gravelly margins. In general, the genus is distributed in a more or less circular pattern in southern Africa, with many more localities in the east than in the west, and with the arid central area nearly devoid of appropriate habitats and collecting sites (Fig. 64).

## References

- Balfour-Browne, J. (1954) A Preliminary Contribution to the Knowledge of the South African Palpicornia (Coleoptera). (Professor J. Omer-Cooper's Investigation of the Inland Waters of Africa). *Journal of the Entomological Society of South Africa*, 17, 96–114.
- Hansen, M. (1998) *World Catalogue of Insects. Vol. 1. Hydraenidae (Coleoptera)*. Apollo Books, Stenstrup, Denmark, 168 pp.
- Jäch, M.A. & Diaz, J.A. (2000) Descriptions of eight new species of *Hydraena* (Coleoptera: Hydraenidae). *Entomological Problems*, 31, 41–58.
- Jäch, M.A., Beutel, R., Diaz, J.A. & Kodada, J. (2000) Subgeneric classification, descriptions of head structures, and world check list of *Hydraena* Kugelann (Insecta: Coleoptera: Hydraenidae). *Annalen des Naturhistorischen Museums in Wien*, 102B, 177–258.
- Orchymont, A. (1948) Mission scientifique de l'Omo, Tome VII.–Fascicule 62. Coleoptera XV. Hydraenidae. *Mémoires du Muséum nationale d'Histoire naturelle (N. S.)*, 27, 29–62.
- Perkins, P.D. (1997) Life on the effective bubble: exocrine secretion delivery systems (ESDS) and the evolution and classification of beetles in the family Hydraenidae (Insecta: Coleoptera). *Annals of Carnegie Museum*, 66 (2), 89–207.
- Perkins, P. D. (2004a) A revision of the South African endemic water beetle genus *Pneuminion* Perkins (Coleoptera: Hydraenidae). *Zootaxa*, 538, 1–38.
- Perkins, P.D. (2004b) A revision of the South African endemic humicolous beetle genus *Nucleotops* Perkins and Balfour-Browne (Coleoptera: Hydraenidae). *Zootaxa*, 559, 1–12.
- Perkins, P.D. (2005a) A revision of the South African endemic humicolous beetle genus *Discozantaena* Perkins and Balfour-Browne (Coleoptera: Hydraenidae). *Zootaxa*, 915, 1–48.
- Perkins, P.D. (2005b) A revision of the African hygropetric genus *Coelometopon* Janssens, and description of *Oomtelecopon* new genus (Coleoptera: Hydraenidae). *Zootaxa*, 949, 1–103.
- Perkins, P.D. (2007) Hydraenidae. In: Stals, R. & de Moor, I. J (Eds), *Guides to the Freshwater Invertebrates of Southern Africa, Vol. 10. Coleoptera*. Water Research Commission, Pretoria, South Africa, pp. 117–132.
- Perkins, P.D. (2008) New species and new collection records for Prosthetopine water beetles from southern Africa (Coleoptera: Hydraenidae). *Zootaxa*, 1864, 1–124.
- Perkins, P.D. (2009) Revisions of the genera *Parhydraena* Orchymont, *Protozantaena* Perkins, *Decarthrocerus* Orchymont, and *Parhydraenopsis* nomen novum, aquatic and humicolous beetles from Africa and Madagascar, and comparative morphology of the tribe Parhydraenini (Coleoptera: Hydraenidae). *Zootaxa*, 2038, 1–119.
- Perkins, P.D. (2011) New records and description of fifty-four new species of aquatic beetles in the genus *Hydraena* Kugelann from South America (Coleoptera: Hydraenidae). *Zootaxa*, 3074, 1–198.
- Perkins, P.D. & Balfour-Browne, J. (1994) Contribution to the taxonomy of aquatic and humicolous beetles of the family Hydraenidae in southern Africa. *Fieldiana: Zoology (New Series)*, 77, 1–159.
- Trizzino, M., Jäch, M.A., Audisio P., Alonso, R. & Ribera, I. (2013) A molecular phylogeny of the cosmopolitan hyperdiverse genus *Hydraena* (Coleoptera, Hydraenidae). *Systematic Entomology*, 38, 192–208.  
<http://dx.doi.org/10.1111/j.1365-3113.2012.00654.x>