

ZOOTAXA

2002

**A first step towards the revision of *Cicurina*:
redescription of type specimens of 60 troglobitic species of
the subgenus *Cicurella* (Araneae: Dictynidae), and a first
visual assessment of their distribution**

PIERRE PAQUIN & NADINE DUPÉRRÉ



Magnolia Press
Auckland, New Zealand

Pierre Paquin & Nadine Dupérré

A first step towards the revision of *Cicurina*: redescription of type specimens of 60 troglobitic species of the subgenus *Cicurella* (Araneae: Dictynidae), and a first visual assessment of their distribution
(*Zootaxa* 2002)

67 pp.; 30 cm.

4 Feb. 2009

ISBN 978-1-86977-325-0 (paperback)

ISBN 978-1-86977-326-7 (Online edition)

FIRST PUBLISHED IN 2009 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

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

© 2009 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)



A first step towards the revision of *Cicurina*: redescription of type specimens of 60 troglobitic species of the subgenus *Cicurella* (Araneae: Dictynidae), and a first visual assessment of their distribution

PIERRE PAQUIN^{1,3,4} & NADINE DUPÉRRÉ²

¹Cave and Endangered Invertebrate Research Laboratory, SWCA Environmental Consultants, 4407 Monterey Oaks Boulevard, Building 1, Suite 110, Austin, Texas, 78749, USA. E-mail: ppaquin@swca.com

²American Museum of Natural History, Division of Invertebrate Zoology, Central Park West at 79th Street, New York, New York, 10024 USA. E-mail: nduperre@amnh.org

³This is publication no. 15 of the Karst Biosciences and Environmental Geophysics Research Laboratories, SWCA Environmental Consultants

⁴Corresponding author

Table of contents

Abstract	4
Introduction	5
Material and methods	6
Taxonomy	8
Family Dictynidae O. Pickard-Cambridge 1871	8
Genus <i>Cicurina</i> Menge 1871	8
Subgenus <i>Cicurella</i> Chamberlin & Ivie 1940	8
<i>Cicurina (Cicurella) bandera</i> Gertsch 1992	14
<i>Cicurina (Cicurella) bandida</i> Gertsch 1992	14
<i>Cicurina (Cicurella) baronia</i> Gertsch 1992	15
<i>Cicurina (Cicurella) barri</i> Gertsch 1992	15
<i>Cicurina (Cicurella) browni</i> Gertsch 1992	16
<i>Cicurina (Cicurella) brunsi</i> Cokendolpher 2004	16
<i>Cicurina (Cicurella) bullis</i> Cokendolpher 2004	17
<i>Cicurina (Cicurella) buwata</i> Chamberlin & Ivie 1940	18
<i>Cicurina (Cicurella) caliga</i> Cokendolpher & Reddell 2001	19
<i>Cicurina (Cicurella) caverna</i> Gertsch 1992	19
<i>Cicurina (Cicurella) coahuila</i> Gertsch 1971	21
<i>Cicurina (Cicurella) coryelli</i> Gertsch 1992	22
<i>Cicurina (Cicurella) cueva</i> Gertsch 1992	22
<i>Cicurina (Cicurella) delrio</i> Gertsch 1992	23
<i>Cicurina (Cicurella) ezelli</i> Gertsch 1992	23
<i>Cicurina (Cicurella) gruta</i> Gertsch 1992	24
<i>Cicurina (Cicurella) holsingeri</i> Gertsch 1992	24
<i>Cicurina (Cicurella) hoodensis</i> Cokendolpher & Reddell 2001	25
<i>Cicurina (Cicurella) leona</i> Gertsch 1992	27
<i>Cicurina (Cicurella) loftini</i> Cokendolpher 2004	27
<i>Cicurina (Cicurella) machete</i> Gertsch 1992	28
<i>Cicurina (Cicurella) madla</i> Gertsch 1992	28
<i>Cicurina (Cicurella) maya</i> Gertsch 1977	29
<i>Cicurina (Cicurella) mckenziei</i> Gertsch 1992	30

<i>Cicurina (Cicurella) medina</i> Gertsch 1992	30
<i>Cicurina (Cicurella) menardia</i> Gertsch 1992	32
<i>Cicurina (Cicurella) mirifica</i> Gertsch 1992	32
<i>Cicurina (Cicurella) mixmaster</i> Cokendolpher & Reddell 2001	33
<i>Cicurina (Cicurella) neovespera</i> Cokendolpher 2004	33
<i>Cicurina (Cicurella) obscura</i> Gertsch 1992.....	34
<i>Cicurina (Cicurella) orellia</i> Gertsch 1992	34
<i>Cicurina (Cicurella) pablo</i> Gertsch 1992	35
<i>Cicurina (Cicurella) pastura</i> Gertsch 1992	36
<i>Cicurina (Cicurella) patei</i> Gertsch 1992	36
<i>Cicurina (Cicurella) platypus</i> Cokendolpher 2004.....	38
<i>Cicurina (Cicurella) porteri</i> Gertsch 1992	38
<i>Cicurina (Cicurella) puentecilla</i> Gertsch 1992	39
<i>Cicurina (Cicurella) rainesi</i> Gertsch 1992	39
<i>Cicurina (Cicurella) reclusa</i> Gertsch 1992.....	40
<i>Cicurina (Cicurella) reddelli</i> Gertsch 1992	40
<i>Cicurina (Cicurella) reyesi</i> Gertsch 1992	41
<i>Cicurina (Cicurella) russelli</i> Gertsch 1992.....	41
<i>Cicurina (Cicurella) sansaba</i> Gertsch 1992	42
<i>Cicurina (Cicurella) selecta</i> Gertsch 1992	42
<i>Cicurina (Cicurella) serena</i> Gertsch 1992.....	43
<i>Cicurina (Cicurella) sheari</i> Gertsch 1992	44
<i>Cicurina (Cicurella) sprousei</i> Gertsch 1992.....	44
<i>Cicurina (Cicurella) stowersi</i> Gertsch 1992	46
<i>Cicurina (Cicurella) suttoni</i> Gertsch 1992	46
<i>Cicurina (Cicurella) travisae</i> Gertsch 1992.....	47
<i>Cicurina (Cicurella) troglobia</i> Cokendolpher 2004.....	47
<i>Cicurina (Cicurella) ubicki</i> Gertsch 1992	48
<i>Cicurina (Cicurella) uvalde</i> Gertsch 1992.....	48
<i>Cicurina (Cicurella) venefica</i> Gertsch 1992	50
<i>Cicurina (Cicurella) venii</i> Gertsch 1992.....	52
<i>Cicurina (Cicurella) vespera</i> Gertsch 1992.....	53
<i>Cicurina (Cicurella) vibora</i> Gertsch 1992	53
<i>Cicurina (Cicurella) wartoni</i> Gertsch 1992	55
<i>Cicurina (Cicurella) watersi</i> Gertsch 1992	55
<i>Cicurina (Cicurella) wiltoni</i> Gertsch 1992	57
Discussion	63
Conclusion	65
Acknowledgements	65
References	66

Abstract

The intraspecific variability recently documented in the genus *Cicurina* strongly suggests a reassessment of the taxonomy, particularly for the troglobitic members. Adult troglobitic *Cicurina* (subgenus *Cicurella*) are rare and most of the 60 nominal species of troglobitic *Cicurina (Cicurella)* were originally described upon the examination of only one or two females, resulting in numerous species differing only in minor variations of the female genitalia. In many cases, such morphological differences could also be interpreted as intraspecific variability. We present the first step of the taxonomic revision of the genus with the redescription of all troglobitic species of the subgenus *Cicurella* based on type specimens to provide a reliable and comparable morphological basis: *Cicurina bandera* Gertsch 1992, *C. bandida* Gertsch 1992, *C. baronia* Gertsch 1992, *C. barri* Gertsch 1992, *C. browni* Gertsch 1992, *C. brunsi* Cokendolpher 2004, *C. bullis* Cokendolpher 2004, *C. buwata* Chamberlin & Ivie 1940, *C. caliga* Cokendolpher & Reddell 2001, *C. caverna* Gertsch 1992, *C. coahuila* Gertsch 1971, *C. coryelli* Gertsch 1992, *C. cueva* Gertsch 1992, *C. delrio* Gertsch 1992, *C. ezelli*

Gertsch 1992, *C. gruta* Gertsch 1992, *C. holsingeri* Gertsch 1992, *C. hoodensis* Cokendolpher & Reddell 2001, *C. leona* Gertsch 1992, *C. loftini* Cokendolpher 2004, *C. machete* Gertsch 1992, *C. madla* Gertsch 1992, *C. maya* Gertsch 1977, *C. mckenziei* Gertsch 1992, *C. medina* Gertsch 1992, *C. menardia* Gertsch 1992, *C. mirifica* Gertsch 1992, *C. mixmaster* Cokendolpher & Reddell 2001, *C. neovespera* Cokendolpher 2004, *C. obscura* Gertsch 1992, *C. orellia* Gertsch 1992, *C. pablo* Gertsch 1992, *C. pastura* Gertsch 1992, *C. patei* Gertsch 1992, *C. platypus* Cokendolpher 2004, *C. porteri* Gertsch 1992, *C. puentecilla* Gertsch 1992, *C. rainesi* Gertsch 1992, *C. reclusa* Gertsch 1992, *C. reddelli* Gertsch 1992, *C. reyesi* Gertsch 1992, *C. russelli* Gertsch 1992, *C. sansaba* Gertsch 1992, *C. selecta* Gertsch 1992, *C. serena* Gertsch 1992, *C. sheari* Gertsch 1992, *C. sprousei* Gertsch 1992, *C. stowersi* Gertsch 1992, *C. suttoni* Gertsch 1992, *C. travisae* Gertsch 1992, *C. troglobia* Cokendolpher 2004, *C. ubicki* Gertsch 1992, *C. uvalde* Gertsch 1992, *C. venefica* Gertsch 1992, *C. venii* Gertsch 1992, *C. vespera* Gertsch 1992, *C. vibora* Gertsch 1992, *C. wartoni* Gertsch 1992, *C. watersi* Gertsch 1992 and *C. wiltoni* Gertsch 1992. We provide, in a series of maps, a first visual assessment of the distribution of these troglobites. Several problems became evident from our examination of the data, including potential synonymies, conflicting distributions, damaged types, potential mislabeling, species known only from one sex, misevaluation of intraspecific variability, and unknown location of type localities. A reliable taxonomic basis for the eyeless members of this genus is particularly important for cave conservation and management because the particular conservation status of these troglobites, particularly for four species that are included on the U.S. Federal list of endangered species.

Key words: cave adaptation, species radiation, endangered species, troglobite, cave conservation, spiders

Introduction

The State of Texas (USA) is remarkable for its cave fauna. More than 1000 cavernicole species have been recorded for the state, including 160 cave obligate species (Reddell 1994; James R. Reddell, pers. comm.). These numbers exclude known troglobitic taxa awaiting formal taxonomic descriptions. Most cave arthropod species are known from few caves and are likely true examples of narrow distributions. Texas counties such as Bexar, Travis and Williamson are considered cave biodiversity hotspots because of their richness and high level of endemism (Culver *et al.* 2003, 2006). To date, sixteen species of cave arthropods from Texas have been included on the U.S. Federal list of endangered species (Drewry 1994; Johnson Linam 1995; Longacre 2000; Rappaport Clark 1998; Stanford & Shull 1993; U.S. Fish and Wildlife Service 1988, 1993, 2002, 2003), while most other troglobites are considered “species of concern” by the state (Bender *et al.* 2005). The most impressive radiation is found in the troglobitic members of the spider genus *Cicurina* (subgenus *Cicurella*), which includes 60 recognized species, almost all endemic to Texas caves.

The first troglobitic species of the genus, *Cicurina (Cicurella) buwata* was described by Chamberlin & Ivie (1940) based on an eyeless immature specimen collected near Austin (Texas). In the 1970s, Gertsch added two species collected in Mexican caves (Gertsch 1971, 1977), and in 1992 he described the bulk of the diversity with 49 new troglobitic species (Gertsch 1992). Cokendolpher & Reddell (2001) and Cokendolpher (2004a, b) subsequently added nine species and synonymized one name under *Cicurina (Cicurella) buwata*. Presently, *Cicurina (Cicurella) madla* Gertsch, *Cicurina (Cicurella) vespera* Gertsch, *Cicurina (Cicurella) venii* Gertsch and *Cicurina (Cicurella) baronia* Gertsch are included on the U.S. Federal list of endangered species.

A major problem for management and cave conservation in Texas is insufficient data to assess species distributions. Collections are lacking for most of the ~6000 caves and sinkholes in the state; identifiable material (adult *Cicurina (Cicurella)* specimens) is rare and taxonomic uncertainties also cause major difficulties. Spider taxonomy largely depends on genitalic structures to delimit species: male genitalia usually provide the best characters, but female genitalia are also widely used. Almost all troglobitic *Cicurina (Cicurella)* species have been defined with the configuration of female genitalia only, as males are known for only a few species. For most spiders, female genitalia are reliable and stable characters but, in the case of *Cicurina*, important intraspecific variability of female genitalia has been reported (Cokendolpher 2004a; Paquin & Hedin 2004) and likely applies to all members of the genus. Many *Cicurina (Cicurella)* species