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**Revision of the New World cycad weevils of the subtribe Allocorynina, with
description of two new genera and three new subgenera
(Coleoptera: Belidae: Oxycoryninae)**

CHARLES W. O'BRIEN¹ & WILLIAM TANG²

¹2313 W. Calle Balaustre, Green Valley, Arizona 85622, USA. E-mail: cobrien6@cox.net

²USDA APHIS PPQ South Florida, P.O. Box 660520, Miami, FL 33266, USA. E-mail: William.Tang@aphis.usda.gov

Corresponding Author E-mail cobrien6@cox.net



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CHARLES W. O'BRIEN & WILLIAM TANG

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Table of contents

Abstract	3
Introduction	4
Materials and Methods	4
Results	6
Subtribe Allocorynina Sharp, 1890	7
Keys to Genera, Subgenera and Species of Extant Adult Allocorynina	9
KEY #1: Key to the species of extant Allocorynina (males)	9
KEY #2: Key to the species of extant Allocorynina (females)	10
<i>Protocorynus</i> O'Brien and Tang, new genus	12
<i>Protocorynus bontai</i> O'Brien and Tang, new species	13
<i>Notorhopalotria</i> Tang and O'Brien, new genus	14
<i>Notorhopalotria taylori</i> Tang and O'Brien, new species	16
<i>Notorhopalotria montgomeryensis</i> O'Brien and Tang, new species	17
<i>Notorhopalotria platysoma</i> Tang and O'Brien, new species	19
<i>Notorhopalotria panamensis</i> O'Brien and Tang, new species	20
<i>Rhopalotria</i> Chevrolat, 1878	21
Subgenus <i>Rhopalotria</i> Chevrolat, 1878	23
<i>Rhopalotria</i> (<i>Rhopalotria</i>) <i>dimidiata</i> Chevrolat, 1878	23
<i>Rhopalotria</i> (<i>Rhopalotria</i>) <i>slossoni</i> (Schaeffer, 1905)	25
<i>Rhopalotria</i> (<i>Rhopalotria</i>) <i>meerowi</i> Tang and O'Brien, new species	27
Subgenus <i>Allocorynus</i> Sharp, 1890	28
<i>Rhopalotria</i> (<i>Allocorynus</i>) <i>mollis</i> (Sharp, 1890)	28
<i>Rhopalotria</i> (<i>Allocorynus</i>) <i>furfuracea</i> O'Brien and Tang, new species	30
<i>Rhopalotria</i> (<i>Allocorynus</i>) <i>calonjei</i> Tang and O'Brien, new species	31
<i>Rhopalotria</i> (<i>Allocorynus</i>) <i>vovidesi</i> O'Brien and Tang, new species	33
<i>Parallocorynus</i> Voss, 1943	34
Subgenus <i>Parallocorynus</i> Voss, 1943	36
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>bicolor</i> (Voss, 1943)	37
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>jonesi</i> O'Brien and Tang new species	39
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>salasae</i> Tang and O'Brien, new species	40
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>gregoryi</i> O'Brien and Tang, new species	41
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>norstogi</i> O'Brien and Tang, new species	43
<i>Parallocorynus</i> (<i>Parallocorynus</i>) <i>perezfarrerae</i> Tang and O'Brien, new species	44
Subgenus <i>Dysicorynus</i> Tang and O'Brien, new subgenus	46
<i>Parallocorynus</i> (<i>Dysicorynus</i>) <i>andrewsi</i> Tang and O'Brien, new species	46
<i>Parallocorynus</i> (<i>Dysicorynus</i>) <i>sonorensis</i> O'Brien and Tang, new species	48
Subgenus <i>Neocorynus</i> O'Brien and Tang, new subgenus	49
<i>Parallocorynus</i> (<i>Neocorynus</i>) <i>inexpectatus</i> O'Brien and Tang, new species	50
<i>Parallocorynus</i> (<i>Neocorynus</i>) <i>iglesiasii</i> Tang and O'Brien, new species	51
Subgenus <i>Eocorynus</i> Tang and O'Brien, new subgenus	52
<i>Parallocorynus</i> (<i>Eocorynus</i>) <i>schiblii</i> Tang and O'Brien, new species	53
<i>Parallocorynus</i> (<i>Eocorynus</i>) <i>chemnicki</i> Tang and O'Brien, new species	55
Concluding remarks	56
Acknowledgements	57
References	57
List of figures	59

Abstract

The taxonomy of the weevils inhabiting male cycad cones in the New World is reviewed. All species belong in a single subtribe, Allocorynina, of the family Belidae, subfamily Oxycoryninae and tribe Oxycorynini and are known to develop only in cones of the cycad genera *Dioon* and *Zamia*. Most species of *Rhopalotria* Chevrolat develop in male cones of *Zamia* ranging from Mexico, Belize, the Caribbean (Cuba, Isle of Youth, Cayman Islands, Jamaica and the Bahamas) to southern Florida, and one species in those of *Dioon spinulosum* in Mexico. *Rhopalotria* consists of three previously described species, two previously described genus-group names (treated herein as subgenera) and four new species described herein: subgenus *Allocorynus* Sharp with *R. calonjei* n. sp., *R. furfuracea* n. sp., *R. mollis* (Sharp) and *R. vovidesi* n. sp., and the nominate subgenus *Rhopalotria* with *R. dimidiata* Chevrolat, *R. meerowi* n. sp. and *R. slossoni* (Schaeffer). The species of *Parallocorynus* Voss develop only in cones of *Dioon* in Mexico, and the genus consists of one previously described species, the nominate subgenus and three new subgenera and 11 new species described herein: subgenus *Dysicorynus* n. subg. with *P. andrewsi* n. sp. and *P. sonorensis* n. sp., subgenus *Eocorynus* n. subg. with *P. chemnicki* n. sp. and

P. schiblii n. sp., subgenus *Neocorynus* n. subg. with *P. iglesiasi* n. sp. and *P. inexpectatus* n. sp., and the nominate subgenus *Parallocorynus* with *P. bicolor* (Voss), *P. gregoryi* n. sp., *P. jonesi* n. sp., *P. norstogi* n. sp., *P. perezfarrerae* n. sp. and *P. salasae* n. sp. Two new genera are described, *Protocorynus* with one new species in Honduras, *P. bontai*, and *Notorhopalotria* with four new species ranging from Costa Rica to Colombia, *N. montgomeryensis*, *N. panamensis*, *N. platysoma* and *N. taylori*. Keys to genera, subgenera and species are provided. All of these weevils are believed to be involved in pollination of their host cycads.

Key words: *Notorhopalotria*, *Protocorynus*, cycad cone, pollinators, new species

Introduction

Some primitive weevils in the curculionoid family Belidae are known to develop in the male cones of cycads in the New World. These were recently studied at the generic level by Marvaldi *et al.* (2006), who reviewed previous classifications of these genera, analyzed them using cladistic analysis of 98 characters, placed them in the subfamily Oxycoryninae, tribe Oxycorynini, subtribe Allocorynina and recognized two genera, *Rhopalotria* and *Parallocorynus*. Recently Tang & O'Brien (2012) examined a larger sample of species from a wider geographical area, placed these two genera under one name, *Rhopalotria*, and tentatively organized them in seven species groups based on distinctive morphological characters.

Herein we present augmented morphological data from a very large number of additional specimens of Allocorynina plus molecular data from a sample selected from most recognized species groups (Tang *et al.* in prep.). Based on this analysis we identify and describe two new genera with five new species, two subgenera of *Rhopalotria* with four new species and four subgenera of *Parallocorynus* (three new) with eleven new species.

An extinct genus and species of Allocorynini (*Pleurambus strongylus*) were described recently from amber from the Dominican Republic by Poinar & Legalov (2014). It is easily distinguished from all extant genera and species by its strongly developed, short lateral pronotal carinae. We accept this genus and species as a member of the Allocorynina. In an earlier paper (2013) Legalov described another extinct genus and species (*Palaeorhopalotria neli*) from France, which he placed in the new tribe Palaeorhopalotriini, and supertribe Allocoryninae. However, we cannot accept this taxon as Allocorynina and question its placement in the Belidae, Oxycoryninae based on many of the characters cited and the illustrations in the paper, e.g. antennae inserted behind middle of rostrum, (not basal), short, almost reaching base of rostrum; rostrum with two longitudinal carinae; elytra convex, with distinct punctate striae; and profemora swollen in female type. The only extant genus of cycads known for certain in Europe in the Tertiary is *Ceratozamia* (Kvaček 2004); however, modern *Ceratozamia* cones do not host any weevils (Tang 2004, unpub. data).

Materials and Methods

This study is based on 15699 adult specimens that were collected mainly from male cones in wild populations of cycads in the New World. Some specimens were collected from plants in cultivation and others were reared from cones originally collected in the wild, but kept in the laboratory for periods of days to eight years. Many of these specimens have been borrowed from, or examined in, private collections and museums; insect collection codens used are based on Evenhuis (2014) and are as follows:

ANIC: Australian National Insect Collection, CSIRO, Canberra, Australia

ASUT: Arizona State University, Tempe, AZ, USA

BMNH: The Natural History Museum, London, United Kingdom

CAS: California Academy of Sciences, San Francisco, CA, USA

CMNC: Canadian Museum of Nature, Ottawa, Canada

CSCA: California State Collection of Arthropods, Sacramento, CA, USA

CWOB: Charles W. O'Brien Collection, Private Collection, Green Valley, AZ, USA

EMEC: Essig Museum of Entomology, University of California, Berkeley, CA, USA

FMNH: Field Museum of Natural History, Chicago, IL, USA