



Zootaxa 3621 (1): 001–082  
www.mapress.com/zootaxa/

Copyright © 2013 Magnolia Press

# Monograph

ISSN 1175-5326 (print edition)

**ZOOTAXA**

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.3621.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:99CC048E-C555-4178-8932-70E93A3B255C>

# ZOOTAXA

3621

## Revision of the genus *Erythromelana* Townsend (Diptera: Tachinidae) and analysis of its phylogeny and diversification

DIEGO J. INCLAN<sup>1</sup> & JOHN O. STIREMAN III<sup>2</sup>

*Department of Biological Sciences, Wright State University, Dayton, OH, USA 45435.*

<sup>1</sup>*current address: Dipartimento Di Agronomia Animali Alimenti Risorse Naturali e Ambiente (DAFNAE), Università degli Studi di Padova, Viale dell'Università 16, 35020 Legnaro (Padova), Italy. E-mail: diegojavier.inclanluna@studenti.unipd.it*

<sup>2</sup>*E-mail: john.stireman@wright.edu*



Magnolia Press  
Auckland, New Zealand

Accepted by J. O'Hara: 17 Dec. 2012; published: 11 Mar. 2013

DIEGO J. INCLAN & JOHN O. STIREMAN III

**Revision of the genus *Erythromelana* Townsend (Diptera: Tachinidae) and analysis of its phylogeny and diversification**

(*Zootaxa* 3621)

82 pp.; 30 cm.

11 Mar 2013

ISBN 978-1-77557-114-8 (paperback)

ISBN 978-1-77557-115-5 (Online edition)

FIRST PUBLISHED IN 2013 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/>

© 2013 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 .....	3
INTRODUCTION .....	4
MATERIALS AND METHODS .....	5
SYSTEMATICS OF THE GENUS <i>ERYTHROMELANA</i> .....	9
<i>ERYTHROMELANA</i> TOWNSEND, 1919 .....	9
<i>ERYTHROMELANA</i> SPECIES GROUPS .....	12
KEY TO <i>ERYTHROMELANA</i> SPECIES .....	12
<i>ERYTHROMELANA</i> JAENA SPECIES GROUP .....	14
<i>Erythromelana jaena</i> Townsend .....	14
<i>Erythromelana abdominalis</i> (Townsend) .....	16
<i>Erythromelana leptoforceps</i> Inclan <b>sp. nov.</b> .....	18
<i>Erythromelana nigrithorax</i> (Wulp) .....	21
<i>Erythromelana curvifrons</i> Inclan <b>sp. nov.</b> .....	23
<i>Erythromelana ecuadoriana</i> Inclan <b>sp. nov.</b> .....	25
<i>Erythromelana eois</i> Inclan <b>sp. nov.</b> .....	27
<i>ERYTHROMELANA</i> CRYPTICA SPECIES GROUP .....	29
<i>Erythromelana cryptica</i> Inclan <b>sp. nov.</b> .....	29
<i>Erythromelana catarina</i> Inclan <b>sp. nov.</b> .....	32
<i>Erythromelana convexiforceps</i> Inclan <b>sp. nov.</b> .....	33
<i>Erythromelana arciforceps</i> Inclan <b>sp. nov.</b> .....	35
<i>Erythromelana napensis</i> Inclan <b>sp. nov.</b> .....	37
<i>Erythromelana distincta</i> Inclan <b>sp. nov.</b> .....	39
<i>Erythromelana woodi</i> Inclan <b>sp. nov.</b> .....	42
PRINCIPAL COMPONENTS ANALYSIS (PCA) .....	62
PCA by genus .....	62
PCA of <i>Erythromelana</i> .....	63
PHYLOGENETIC RELATIONSHIPS OF <i>ERYTHROMELANA</i> SPECIES .....	65
Phylogenetic analysis of morphological characters .....	65
Phylogenetic analysis of molecular characters .....	65
TAXONOMIC CHANGES .....	68
<i>ERYTHROMELANA</i> HOST ASSOCIATIONS, SPECIES RICHNESS AND DIVERSIFICATION .....	69
<i>ERYTHROMELANA</i> HOST ASSOCIATIONS .....	69
GEOGRAPHIC PATTERNS IN <i>ERYTHROMELANA</i> RICHNESS .....	71
ACKNOWLEDGMENTS .....	75
REFERENCES .....	75
APPENDIX 1 .....	78
APPENDIX 2 .....	81
APPENDIX 3 .....	82

## ABSTRACT

The Neotropics harbor an enormous diversity of tachinid flies (Diptera: Tachinidae), yet the fauna remains poorly understood. This is especially true of the tribe Blondeliini, which is particularly diverse in this region and in great need of taxonomic attention. Here, the Neotropical blondeliine genus *Erythromelana* Townsend is revised. This genus is widely distributed from southern Mexico to northern Argentina, with the Andes being a hotspot of diversity. Known hosts belong to the genus *Eois* Hübner (Lepidoptera: Geometridae). This revision includes the redescription of three previously described species and the description of 11 new species based on characteristics of adults and immatures. The new species are *E. arciforceps* sp. nov., *E. catarina* sp. nov., *E. convexiforceps* sp. nov., *E. cryptica* sp. nov., *E. curvifrons* sp. nov., *E. distincta* sp. nov., *E. ecuadoriana* sp. nov., *E. eois* sp. nov., *E. leptoforceps* sp. nov., *E. napensis* sp. nov., and *E. woodi* sp. nov. A morphological database of 62 characters was constructed to assess morphological variation within and among species and species groups using Principal Components Analysis. Means and medians for these morphological traits were calculated to infer phylogenetic relationships using parsimony. Additionally, a maximum likelihood phylogenetic analysis was performed using COI mtDNA sequences for a subset of eight species. Nominal species *E. obscurifrons* (Wulp) is treated as a *nomen dubium* within *Erythromelana*. Two species previously assigned to *Erythromelana* appear to represent distinct genera with unclear relationships to this genus and are reinstated as monotypic genera: *Myiodoriops marginalis* Townsend and *Euptilodegeeria obumbrata* (Wulp), revived status. Biological and phylogenetic data are used to infer modes of diversification within *Erythromelana*.

**Key words:** Tachinidae, Blondeliini, Andes Mountains, Neotropical, *Eois*, PCA, speciation mode