*Zootaxa* 3229: 1–34 (2012)
www.mapress.com/zootaxa/


**Article**

ISSN 1175-5326 (print edition)
**ZOOTAXA**
ISSN 1175-5334 (online edition)

# Towards addressing the current state of confusion within the Hexabothriidae Price, 1942 (1908): *Callorhynchocotyle* Suriano & Incorvaia, 1982 (Monogenea: Hexabothriidae) re-visited, with the preliminary evaluation of novel parameters for measuring haptoral armature of hexabothriids

DAVID VAUGHAN[1,2] & KEVIN CHRISTISON[1,3]

[1]*Department of Biodiversity and Conservation Biology, University of the Western Cape, Private Bag X 17, Bellville, 7535, South Africa.*

[2]*Aquatic Animal Health Research, Two Oceans Aquarium, P.O. Box 50603, Victoria & Alfred Waterfront, Cape Town, 8000, South Africa. E-mail: dvaughan@aquarium.co.za*

[3]*Department of Agriculture, Forestry and Fisheries, Private Bag X2, Roggebaai, 8012, South Africa. E-mail: KevinCH@daff.gov.za*

## Abstract

The monogenean family, Hexabothriidae Price, 1942 (1908), currently consists of 15 valid genera parasitic on the gills of chondrichthyan fishes. The hexabothriid literature is littered with inconsistencies, ambiguity and editorial errors which hampers the progress and the development of investigations after the significant treatment of the family by Boeger & Kritsky (1989). A lack of consistency in the measurement protocol for the haptoral armature of hexabothriids is highlighted and discussed. The preliminary results of a new measurement protocol incorporating existing and novel parameters were explored for the first time using statistical analyses. Character variables were investigated for their utility as potentially useful discriminators using univariate and multivariate analyses. The elimination of age-associated variance in sucker sclerites was performed by ratio-transformation of the data to an age-dependant variable. Character variables with a high coefficient of variance after accounting for age were disqualified for use in the subsequent analyses. A coefficient of variance exceeding a conservative 10% limit was considered the result of measurement error resulting from the small sizes of these variables and therefore may also reflect the limitations of hardware and software in making small but accurate measurements. The proposed protocol is tested on representatives of *Callorhynchocotyle* and a *Rajonchocotyle* species to test the utility of character variables in separating species. Principle Component Analysis of the combination of the sucker-sclerites and the hamulus provided a preliminary level of robustness in separating *Callorhynchocotyle* species with the exception of *Callorhynchocotyle hydrolagi* for which there were insufficient data. Results confirm the importance of the hamulus in providing valuable diagnostic significance but the shape of the sucker sclerites as a function of total length and diameter may also provide significant potential. *Callorhynchocotyle* is revisited with the addition of new specimens for 3 of the species. The new data resulting from the measurement protocol are included in the redescription of *Callorhynchocotyle marplatensis*, *Callorhynchocotyle callorhynchi* and *Callorhynchocotyle amatoi*. Supplemental information is provided for *C. hydrolagi* and *Callorhynchocotyle sagamiensis*.

**Key words:** Hexabothriidae Price, 1942 (1908), *Callorhynchocotyle* Suriano & Incorvaia, 1982, morphometrics; novel parameters, Monogenea

## Introduction

Representatives of the Hexabothriidae Price, 1942 (1908) are polyopisthocotylean monogeneans, exclusively parasitic on the gills of chondrichthyan host fishes. Fifteen genera are currently recognised as valid.

Although the hexabothriid literature is historically plagued with inconsistencies (see discussion), part of the recent confusion within the family follows the most recent revision by Boeger & Kritsky (1989). These authors considered 13 hexabothriid genera valid. However, they erroneously omitted *Pristonchocotyle* Watson & Thorson, 1976 from this evaluation. In addition, they considered 8 hexabothriid taxa to be species *incertae sedis* because they could not be recognised as members of any known genera according to their revised diagnoses at that time. Of

*Accepted by N. Dronen: 25 Jan. 2012; published: 9 Mar. 2012*