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Glaucalges tytonis sp. n. (Analgoidea, Xolalgidae) from the barn owl *Tyto alba* (Strigiformes, Tytonidae): compiling morphology with DNA barcode data for taxon descriptions in mites (Acari)

JACEK DABERT[1, 4], RAINER EHRNSBERGER[2] & MIROSLAWA DABERT[3]

[1]*Department of Animal Morphology, Institute of Environmental Biology, Adam Mickiewicz University, Umultowska 89, 61-614 Poznan, Poland. E-mail: Jacek.Dabert@amu.edu.pl*
[2]*Institute of Nature Conservation and Environmental Education, University of Vechta, D-49377 Vechta, Germany. E-mail: rainer.ehrnsberger@uni-vechta.de*
[3]*Molecular Biology Techniques Laboratory, Faculty of Biology, Adam Mickiewicz University, Umultowska 89, 61-614 Poznan, Poland. E-mail: Miroslawa.Dabert@amu.edu.pl*
[4]*Corresponding author*

Abstract

Typical (re)descriptions of feather mite species are based on characteristics of external morphology and of internal sclerotized structures visible in cleared specimens. We propose extending this standard by including sequence data of the cytochrome oxidase subunit I gene fragment (DNA barcode region chosen by the Consortium for the Barcode of Life). We describe a method of nondestructive DNA isolation, which leaves the feather mite exoskeleton intact for subsequent morphological analysis. Description of a new feather mite species *Glaucalges tytonis* (Analgoidea, Xolalgidae) from the plumage of the barn owl *Tyto alba* (Scopoli, 1769) (Strigiformes, Tytonidae) is presented as an example of the new procedure that may be implemented both for feather mites as well as for other groups of Acari.

Key words: cryptic species, DNA barcoding, COI, molecular taxonomy, morphological description, new species

Introduction

Feather mites (Astigmata, Analgoidea + Pterolichoidea) are a vast group of parasitic and commensalistic mites associated with birds, mainly with the plumage. Their entire life cycle takes place on the host body and dispersal is almost exclusively via transfer between conspecific bird individuals (Dabert & Mironov 1999, Proctor 2003). This should result in a predominant pattern of single-host (monoxenous) host-parasite associations that evolved as a consequence of close cospeciation between feather mites and birds (Dabert 2005). However, a relatively large number of host-mite associations are classified as multi-host (oligo- or polyxenous) where morphologically undistinguishable mites inhabit a wide range of variously related host species.

An example of multi-host relationships is the xolalgid species *Glaucalges attenuatus* (Buchholz, 1869). The genus *Glaucalges* (Analgoidea, Xolalgidae) was established by Gaud (1980) for a single species *Dermaleichus attenuatus*. This species was primarily described and illustrated by Buchholz (1869) from long-eared owl *Asio otus* (L., 1758) (Strigiformes, Strigidae) and subsequently reported from a wide range of owl taxa (Tab. 1). Gaud and Atyeo (1981) have included in the genus *Glaucalges* a second species, *Glaucalges pteropus* (*Protalges pteropus* Gaud et Mouchet, 1959) described from great blue turaco *Corythaeola cristata* (Vieillot) (Musophagiformes: Musophagidae). Our present stage of knowledge of *Glaucalges* systematics cannot answer if the genus has an unusually wide host range or if the host record for *G. pteropus* is a case of accidental contamination.

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