



Zootaxa 3982 (1): 001–082
www.mapress.com/zootaxa/

Copyright © 2015 Magnolia Press

Monograph

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.3982.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:91641D79-640D-4C8C-ABFA-9A735FCAC55E>

ZOOTAXA

3982

Systematics and morphology of *Potamotrygon orbignyi* (Castelnaud, 1855) and allied forms (Chondrichthyes: Myliobatiformes: Potamotrygonidae)

JOÃO PAULO C. B. DA SILVA* & MARCELO R. DE CARVALHO

Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, Rua do Matão, Trav. 14, no. 101, 05508-090, São Paulo, SP, Brazil. E-mails: jpcbs@ib.usp.br; mrcarvalho@ib.usp.br

**Corresponding author*



Magnolia Press
Auckland, New Zealand

JOÃO PAULO C. B. DA SILVA* & MARCELO R. DE CARVALHO

Systematics and morphology of *Potamotrygon orbignyi* (Castelnau, 1855) and allied forms (Chondrichthyes: Myliobatiformes: Potamotrygonidae)

(*Zootaxa* 3982)

82 pp.; 30 cm.

8 Jul. 2015

ISBN 978-1-77557-739-3 (paperback)

ISBN 978-1-77557-740-9 (Online edition)

FIRST PUBLISHED IN 2015 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

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

© 2015 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	3
Material and Methods	4
Family Potamotrygonidae	5
<i>Potamotrygon orbignyi</i>	5
<i>Potamotrygon humerosa</i>	45
<i>Potamotrygon marinae</i>	66
Key for species identification	72
Discussion	73
Characters shared by species	73
Distributional patterns exhibited by the species	74
Acknowledgments	77
References	77

Abstract

The Neotropical freshwater stingray *Potamotrygon orbignyi* (Castelnau, 1855), and other similar "reticulated" species occurring in northern South American basins, were submitted to a thorough taxonomic analysis based on an extensive external and internal morphological study. The identity of *P. orbignyi* and the taxonomic status of the related nominal species *Potamotrygon dumerilii* (Castelnau, 1855), *Potamotrygon reticulata* (Günther, 1880), and *Potamotrygon humerosa* Garman, 1913, are defined. Taxonomic and morphological analyses revealed that *P. reticulata* and *P. dumerilii* fall within the range of variation found in *P. orbignyi* and were consequently treated as junior synonyms, corroborating previous works. The extensive variation in coloration observed in *P. orbignyi* could not be divided into consistent morphotypes; *P. orbignyi* is therefore a widespread species in the upper, mid and lower Amazonas basin, the Orinoco drainage, and in rivers of Suriname and the Guianas. Additionally, *P. humerosa* and *Potamotrygon marinae* Deynat, 2007 were found to present characters that support their validity, and are redescribed based on newly collected material. *Potamotrygon humerosa* occurs predominantly in the mid and lower Amazonas River and in lower reaches of many of its affluents, whereas *P. marinae* is known only from French Guiana and Suriname. Characters that proved valuable as diagnostic indicators, either in combination or as derived features, are primarily from coloration, dermal denticles and spines (morphology, development and distribution), meristic features (e.g. numbers of tooth rows, vertebrae and mesopterygial radials), morphometric proportions (e.g. snout length, tail width at base and length), and size at sexual maturity.

Key words: Taxonomy, Neotropical freshwater stingrays, anatomy, *Potamotrygon humerosa*, *Potamotrygon marinae*

Introduction

Stingrays of the family Potamotrygonidae Garman, 1877 are exclusive to South American freshwaters (Thorson *et al.*, 1978; Carvalho *et al.*, 2003; Rosa *et al.*, 2010). Monophyly of the family is well corroborated by several characters, most evidently by the presence of a median elongated prepelvic process on the pelvic girdle, as well as morphological and physiological adaptations related to their presence in freshwater environments (Garman, 1913; Thorson *et al.*, 1978; Rosa, 1985; Carvalho *et al.*, 2003). Four genera are presently recognized as valid (Carvalho *et al.*, 2003; Carvalho & Lovejoy, 2011): *Potamotrygon* Garman, 1877, *Paratrygon* Duméril, 1865, *Plesiotrygon* Rosa, Castello & Thorson, 1987, and *Heliotrygon* Carvalho & Lovejoy, 2011. *Paratrygon* is the only monotypic genus (but presently under review), *Heliotrygon* and *Plesiotrygon* have two valid species each (Carvalho & Lovejoy, 2011; Rosa *et al.*, 1987; Carvalho & Ragno, 2011), and *Potamotrygon*, the most diverse genus, includes more than 20 valid species (Carvalho *et al.*, 2003, 2011; Silva & Carvalho, 2011a, b; Loboda & Carvalho, 2013; Fontenelle *et al.*, 2014).

The identification of potamotrygonid species is largely based on dorsal color pattern. However, intraspecific variation in dorsal coloration has been observed for species with widespread distributions (e.g. *P. motoro* and *P. orbignyi*), and even for species endemic to single river basins (e.g. *Potamotrygon henlei* in the Tocantins River basin, *P. leopoldi* in the Xingu River). Additionally, the identification of several species based only on dorsal disc color is frequently misleading (summary in Carvalho *et al.*, 2003). Even with the recent publication of thorough systematic works (e.g. Carvalho *et al.*, 2011; Silva & Carvalho, 2011a, b; Carvalho & Ragno, 2011; Loboda &