



# ZOOTAXA

3832

## Checklist of the marine and estuarine fishes of Madang District, Papua New Guinea, western Pacific Ocean, with 820 new records

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Magnolia Press  
Auckland, New Zealand

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**Checklist of the marine and estuarine fishes of Madang District, Papua New Guinea, western Pacific Ocean, with 820 new records**  
(*Zootaxa* 3832)

247 pp.; 30 cm.

8 Jul. 2014

ISBN 978-1-77557-443-9 (paperback)

ISBN 978-1-77557-444-6 (Online edition)

FIRST PUBLISHED IN 2014 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/>

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ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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## Abstract

A checklist of the marine and estuarine fishes of Madang District is presented, combining both previous and new records. After the recent PAPUA NIUGINI 2012 expedition, a total of 1337 species in 129 families have been recorded from the region. One species and one family is not native (Cichlidae: *Oreochromis mossambicus*), but has been introduced. The native fish fauna of Madang therefore consists of 1336 species in 128 families. The largest families are the Gobiidae, Labridae, Pomacentridae, Apogonidae, Serranidae, Blenniidae, Chaetodontidae, Syngnathidae and Muraenidae, Scorpaenidae and Lutjanidae, Myctophidae, Acanthuridae, Scaridae, Holocentridae, Carangidae, Pomacanthidae and Tetraodontidae, and Caesionidae. A total of 820 fish species (61.4 % of the total marine and estuarine fish fauna) are recorded from Madang for the first time.

The fish fauna of Madang includes a total of 187 species of transitional waters and 1326 species in marine habitats. A total of 156 species of the marine or estuarine species also occurs in freshwater. Zoogeographically, 1271 species have a wide distribution range, most frequently a broad Indo-West Pacific distribution. Among the remaining species, only 8 are endemic to Madang District.

Anthropogenic threats to the fish fauna and habitats of Madang District include extensive fishing in Madang Lagoon, sometimes with destructive fishing practices; the discharge of untreated sewage of human settlements, mining and industrial developments into the lagoon and nearby oceanic habitats; and destruction of mangrove habitats by extensive construction work on the shores. These anthropogenic threats may call for conservation and monitoring measures in the near future.

**Key words:** Fishes, Papua New Guinea, Madang, checklist, distribution, endemism, new records

## Introduction

Madang District is situated on the northeastern mainland coast of Papua New Guinea. Its dominant geographical feature is an extensive, unusual lagoon system north of its capital, Madang. The fish fauna of the district has been studied for about 100 years. It has recently been estimated to harbour approximately 800 fish species (Allen & Erdmann, 2012).

The present paper is an outcome of the PAPUA NIUGINI Expedition, which surveyed the marine fauna and flora of Madang district, Papua New Guinea between October 24 and December 26, 2012. The fish fauna of Madang Lagoon was examined from 25 Oct. 2012–08 Nov. 2012, mainly by visual and photographic census, supplemented by a few small collecting stations throughout the expedition, but specifically during first leg (named CORAL TRIANGLE 1, 25 Oct. 2012–08 Nov. 2012) on board the R/V Alis. An additional, larger segment of the deep-sea fishes collected during legs 4–5 of the expedition and previous one (BIOPAPUA Cruise; see Pante *et al.*, 2012) is still under examination; it could not be exclusively included in the present checklist.

In order to document the results of the expedition, as well as materials described in the literature and/or contained in scientific collections (valuable collections of fishes from Madang are deposited at AMS, ASIZ, BPBM, CAS, MNHN, NTUM, ROM, SMF, USNM, and WAM), a checklist of the marine and estuarine fishes of Madang District is provided in the present paper.

giving permission to examine specimens in their care: D. F. Hoese, M. McGrouther, J. R. Paxton, S. Reader, T. Trnski (all AMS), D. Didier (ANSP), O. Crimmen, N. Merrett (BMNH), J. E. Randall, A. Suzumoto (BPBM), W. N. Eschmeyer, T. Iwamoto (CAS), P. Kailola (KFRS), G. Duhamel, J.-C. Hureau (MNHN), K. Matsuura (NSMT), H. K. Larson (NTM), R. Winterbottom (ROM), T. Alpermann, W. Klauswitz, C. Köhler, F. Krupp, F. Uiblein, H. Zetsche (all SMF), J. Finan, S. Jewett, G. D. Johnson, K. Murphy, L. Palmer, D. G. Smith, V. G. Springer, J. T. Williams (all USNM), J. B. Hutchins, S. Morrison, K. Smith (all WAM). John E. Randall (Honolulu) and J. T. Williams (USNM) provided photographs of Madang fishes. Pascale Chabanet (IRD, Saint-Clothilde, Réunion) provided a photograph of *Ecsenius yaeyamaensis*. We are grateful to David W. Greenfield (California Academy of Sciences and University of Hawaii) and Richard Winterbottom (ROM) who assisted identifying a species of *Eviota*, Douglass F. Hoese (AMS) who identified *Silhouettea* sp., Seishi Kimura (FRLM) who assisted with the identification of atherinid specimens, Helen K. Larson (Queensland, Australia) who identified *Lobulogobius omanensis*, and William F. Smith-Vaniz (Florida Museum of Natural History, Gainesville, FL, USA) who identified *Caranx sexfasciatus*.

We are grateful to S. Petri (SMNS) and the inter-library loan teams of the Württembergische Landesbibliothek (Stuttgart) and the Universitätsbibliothek Würzburg, who supported this study over the years facilitating numerous inter-library loans of scientific literature.

Tan H. H. was partly funded by the Raffles Museum of Biodiversity Research, National University of Singapore. W.-J. Chen was supported by a Taiwan-France cooperate grant from the National Science Council, Taiwan (Grant No. NSC 102-2923-B-002-001-MY3).

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