Zootaxa 2599: 1–62 (2010)
www.mapress.com/zootaxa/

Monograph

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

ZOOTAXA

2599

Identification guide to the shallow water (0–200 m) octocorals of the South Atlantic Bight

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Magnolia Press
Auckland, New Zealand

Accepted by P. Alderslade: 29 Jul. 2010; published: 31 Aug. 2010

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Identification guide to the shallow water (0–200 m) octocorals of the South Atlantic Bight
(*Zootaxa* 2599)

62 pp.; 30 cm.

31 August 2010

ISBN 978-1-86977-583-4 (paperback)

ISBN 978-1-86977-584-1 (Online edition)

FIRST PUBLISHED IN 2010 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

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

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

Octocoral diversity is well documented in the tropical western Atlantic and Indo–Pacific, but it has been several decades since a thorough species account of the shallow South Atlantic Bight region was produced (northwestern Atlantic between Cape Hatteras, NC and Cape Canaveral, FL, USA). Through the use of material from the NMNH and SERTC Octocorallia (=Alcyonaria) collections, this work documents the presence of 28 species of octocorals recorded in the shallow (0–200 m) South Atlantic Bight and reports five new range extensions. Included are illustrated keys to the species, synonymies, species images and remarks, and SEM images of sclerites from described species without previously published sclerite imagery. A brief history of previous work and discussion of octocoral morphology are also included.

Key words: Coelenterata, Cnidaria, Octocorallia, Alcyonaria, Gorgonacea, Alcyonacea, Alcyoniidae, Nidaliidae, Nephtheidae, Anthothelidae, Plexauridae, Gorgoniidae, Ellisellidae, Clavulariidae, Renillidae, Kophobelemnidae, Virgulariidae, western Atlantic

Introduction

The presence of octocorals is recorded in all the world's oceans and at all depths. While diversity of the group is highest in the tropical western Pacific, the Atlantic also maintains a rich octocoral species assemblage. Worldwide, there are approximately 340 genera of octocorals from 46 valid families (Bayer 1981a; Williams 1995; Williams 2001–2010). The growing number of new species recorded and revisions within the families makes it difficult to arrive at an exact number of species, but it is estimated at over 3200 worldwide (Bayer 1981a; Williams 1995; Williams 2001–2010; Daly *et al.* 2007). The Octocorallia has been the subject of many recent molecular phylogenetic studies which may eventually lead to major revisions of the classification as it is currently accepted. C.S. McFadden reviewed these studies and their significance to modern classification in Daly *et.al* (2007). Using the classification of Bayer (1981a) and Williams (1995), this work discusses 28 species from 11 families known from the South Atlantic Bight (SAB) to a depth of 200 m.

The presence of octocorals in nearly all benthic marine habitats indicates the adaptive nature of this group compared to other taxa within the Cnidaria. Octocorals are very numerous in shallow tropical reef communities and are well-documented in deep benthic communities, where the colonies may provide substrate in habitats with poor complexity. The diversity of the Octocorallia (=Alcyonaria) in the shallow SAB is low in comparison to similarly shallow areas of the Caribbean and tropical western Pacific, however this group can be considered an abundant sessile invertebrate taxon in hard bottom communities and colonies are often associated with numerous commensal organisms.

The paucity of recent, regional taxonomic literature and the problematic identification associated with the Octocorallia presented the need for this regional guide. Specifically, some members of the former Paramuriceidae (now Plexauridae) occurring in the shallow SAB have not been treated for several decades apart from inclusion in checklists and technical reports. This work aims to bridge this gap and is intended to assist scientists, managers, educators and students to identify, through the use of keys, species notes, and images, the octocorals present from depths less than 200 m in the SAB.

Prior work. The taxonomy and classification of western Atlantic octocorals were treated extensively by Deichmann (1936), who included in her monograph all western Atlantic shallow- and deep-water species known at the time and she also described several new species. Her work was a continuation of A. E. Verrill's study of material collected during the Blake Expedition of 1877–1878, a manuscript he was unable to complete before his death. Nearly 30 years later, Bayer (1961) presented an updated taxonomic treatment of western Atlantic tropical and subtropical shallow water octocorals and then produced a key (Bayer, 1981a) to the non-pennatulacean genera of world-wide Octocorallia. Subsequently, Williams (1995) published a world key to the pennatulacean octocorals which complemented Bayer's (1981a) key, and the two works comprise a standard for the modern classification of the Octocorallia. In the shadow of these important taxonomic works, the rationale for developing a regional key to the octocorals of the SAB was based on the following: a) since the publishing of Deichmann's (1936) western Atlantic key many new species have been described, four of which are included in the present work, and octocoral classification has changed significantly; b) although