



***Amphicutis stygobita*, a new genus and new species of brittle star
(Echinodermata: Ophiuroidea: Ophiurida: Amphilepididae) found
in Bernier Cave, an anchialine cave on San Salvador Island, Bahamas**

CHRISTOPHER M. POMORY^{1,4}, JERRY H. CARPENTER² & JOHN H. WINTER³

¹Department of Biology, University of West Florida, Pensacola, Florida 32514 USA. E-mail: cpomory@uwf.edu

²Department of Biological Sciences, Northern Kentucky University, Highland Heights, Kentucky 41099 USA.

E-mail: carpenter@nku.edu

³Department of Biology, Chemistry and Environmental Studies, Molloy College, Rockville Centre, New York 11571 USA.

E-mail: jwinter@molloy.edu

⁴Corresponding author

Abstract

Amphicutis stygobita is a new genus and new species of ophiuroid found in Bernier Cave, an anchialine cave on San Salvador Island, Bahamas. The species is small (disk diameter 3–4 mm) with short arms (2–2.5X disk diameter). Dorsal disk features include imbricated scales, and oval radial shields separated by a column of scales. Ventral disk features include imbricated scales, genital scales flat and thin, no bursal sacs, second tentacle pore of oral frame outside mouth slit, oral shields small ovals similar in appearance to disk scales, two to three oral papillae per jaw side with the proximal papillae usually in the infradental position, and ventral tooth at the apex of each jaw broadly rounded. The arms are the most distinctive feature. Dorsal arm plates are small diamond-oval shaped and separated from one another by a gap equal to the arm plate length. Ventral arm plates are small figure-8 shaped and separated from one another by a gap equal to the arm plate length. Lateral arm plates meet medially on dorsal and ventral sides and make up most of an arm segment. Each lateral arm plate bears two arm spines. Disk and arms are often formed by soft tissue outlining plates and scales, but lacking significant calcification. A raised skin persists after calcification, from which the genus name derives. The species is named for its aquatic cave-dwelling habit, apparently endemic to a single cave, and may be unique among ophiuroids in being restricted to a cave environment.

Key words: ophiuroid, endemism, troglobite, stygobite, Caribbean

Introduction

Caves formed in limestone bedrock or of volcanic origin are found worldwide and contain a very interesting diversity of species, many specialized for a cave-dwelling existence through the loss of pigments and the reprioritization of sensory structures (Culver & Pipan 2009). Anchialine environments, those with a salt-water layer without a surface connection to the ocean (Stock *et al.* 1986), are common in tropical regions where karst limestone formations near and on the coast provide a wide size range of sinkholes and cave systems that are porous to saltwater intrusion (Culver & Pipan 2009). The conditions of the horizontal (phreatic) cave systems in The Bahamas are the result of meteoric water, microbes and organic matter at the freshwater /saltwater interface, and sea level fluctuations associated with glacio-eustatic changes over time leading to the current conduit systems of the islands that respond to tidal fluctuations (Schwabe & Carew 2006; Schwabe *et al.* 2008).

Anchialine systems are dominated by crustaceans (Sket 1996; Iliffe & Kornicker 2009), and San Salvador Island has several caves with endemic species of crustaceans (Carpenter 1981; Yager & Carpenter 1999). Echinoderms are conspicuously absent from most cave localities (e.g. Peck 1999; Tomlinson & Boulton 2008; Silva & Ferreira 2009), but do occur infrequently in a few places (Salvini-Plawen & Rao 1986; Solís-Marín & Laguarda-Figueras 2010).