



Discovery of *Aphanipathes verticillata* (Cnidaria: Anthozoa: Antipatharia) in the Hawaiian Islands

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Abstract

Mesophotic coral reef surveys conducted off Maui in 2008–2009 revealed several specimens superficially resembling the commercial black coral species *Antipathes griggi* Opresko 2009. After subsequent microscopic examination of the skeletal features, these colonies proved to be morphologically very similar to *Aphanipathes verticillata* Brook 1889, a species never before reported from the Hawaiian Islands. A comparison with samples of the type material of *A. verticillata* indicated that the specimens collected in Hawaiian waters differed from the type in having simpler and less dense tubercles on the skeletal spines, a character which merits the recognition of the Hawaiian population as a new subspecies, *A. verticillata mauiensis*. Colonies of the new subspecies exhibit considerable morphological variation; DNA analysis of fifteen specimens ruled out the possibility of the presence of a cryptic species. Further DNA investigations on specimens from various localities in the western Pacific and Indian Ocean are needed to better understand the genetic relationship between the two forms. The morphological similarity of *A. verticillata mauiensis* with *Antipathes griggi* raises questions concerning the validity of past field surveys evaluating the population size and structure of *A. griggi* since it is possible that the two species could easily be misidentified based on gross morphology alone. Additional studies are also needed to document the geographic and bathymetric distribution of the subspecies along the Hawaiian Island chain.

Key words: Aphanipathidae, *Aphanipathes verticillata mauiensis*, new subspecies, black coral, range extension.

Introduction

The shallow-water black coral fauna of the Hawaiian Islands is dominated by two species, *Antipathes grandis* Verrill 1928 (see Wagner *et al.* 2010, for detailed description) and *Antipathes griggi* Opresko 2009 (the latter formerly referred to as *A. dichotoma* Pallas 1766, see Opresko 2009, for redescription). Both species have been utilized in the commercial black coral industry (Grigg 2001, 2002; Wagner *et al.* 2010). Although the two species both reach a similar size of 1 meter or more, they can be differentiated by general features of the corallum with *A. grandis* having thinner, wispy terminal branchlets arising from all sides of the lower order branches, and *A. griggi* having thicker, mostly upright, often uniserially arranged, terminal branchlets. In addition, there can be color differences between the two species where *A. griggi* is typically red to reddish-orange while *A. grandis* can be red to pale to white. Recently, another species almost identical in color, size and general branching pattern to *A. griggi* was discovered in the Au'au Channel at depths of 88 to 130 m. This species, identified as a new subspecies of *Aphanipathes verticillata* Brook 1889, was previously unknown in the Hawaiian Islands. Because it occurs in overlapping depths with *A. griggi*, it can easily be misidentified as that species. The purpose of this paper is to: 1) provide a description of the Hawaiian subspecies of *A. verticillata*, 2) describe how it differs from the typical form, and 3) illustrate the key features that differentiate it from *A. griggi*.