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## Description of a new species of *Leiopathes* (Antipatharia: Leiopathidae) from the Hawaiian Islands

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### Abstract

The Hawaiian antipatharian coral previously identified as *Leiopathes glaberrima* (Esper, 1792) and *Leiopathes* sp. is described using polyp morphology, skeletal spine morphology and *in situ* photographs, and assigned the new name of *Leiopathes annosa* sp. nov. The species is characterized by tall (1 m or more), fan-shaped colonies, with thick, sometimes overlapping branches, and tissues that are colored bright orange when alive. Skeletal spines are smooth, hemispherical, often times multi-lobed, and typically 75 µm tall, but range between 30–225 µm. Polyps are of variable size (0.88–3.35 mm) and arranged on all sides of the corallum on thicker branches, and uniserially on terminal branches. *Leiopathes annosa* sp. nov. differs from all other nominal species of *Leiopathes* by having a generally flabellate corallum with thick branches and conspicuous skeletal spines that are multi-lobed and hemispherical. The biogeographical distribution of species within the monogeneric family Leiopathidae is presented and discussed.

**Key words:** Anthozoa, black coral, biogeography, cold-water coral, deep-sea, *Leiopathes annosa* sp. nov.

### Introduction

Antipatharians, commonly known as black corals, are a taxonomic order within the anthozoan subclass Hexacorallia characterized by (1) proteinaceous skeletons that are covered with minute skeletal spines, (2) polyps with six unbranched tentacles that are non-retractile, (3) six primary mesenteries, and (4) being exclusively colonial (reviewed by Wagner *et al.* 2012; Brugler *et al.* 2013). The antipatharian order currently encompasses over 235 described species, which are divided into 42 genera and seven families (Wagner *et al.* 2012). Among these families, the Leiopathidae Haeckel, 1896, is fairly distinctive from the remaining Antipatharia in that all species have poorly developed skeletal spines, particularly on the thickest branches and stem, and possess polyps with twelve mesenteries (six primary and six secondary), whereas all other antipatharians have either six (six primary and no secondary) or ten (six primary and four secondary) (Opresko 1998). Due to these substantial morphological differences, the Leiopathidae may even merit higher taxonomic status (Opresko 1998; Brugler *et al.* 2013). In fact, the family may be the most primitive in the antipatharian order, as indicated by an unpublished phylogeny based on 16S, 18S and 28S sequences by the CnidToL Working Group that placed the Leiopathidae as a sister to all other black coral families with strong node support (as cited in Brugler *et al.* 2013).

The family Leiopathidae consists of a single genus, *Leiopathes* Haime, 1849, which currently contains eight described species (Molodtsova 2011): *L. glaberrima* (Esper, 1792), *L. expansa* (Johnson, 1899), *L. grimaldii* (Roule, 1905), *L. valdiviae* (Pax, 1915) *L. acanthophora* Opresko, 1998, *L. secunda* Opresko, 1998, *L. bullosa* Opresko, 1998, and *L. montana* Molodtsova, 2011. Additionally, several undescribed and unidentified *Leiopathes* spp. have been reported from around the globe. In the Hawaiian Islands, the genus *Leiopathes* is common and abundant at depths below 300 m (Grigg and Opresko 1977; Grigg 1988; Chave and Malahoff 1998; Parrish 2006; Parrish and Baco 2007; Baco 2007). In particular, *L. glaberrima*, a species originally described from the Mediterranean Sea (Esper 1792; Grasshoff 1991; Opresko and Baron Szabo 2001), has been reported from around the Hawaiian Archipelago (Grigg and Opresko 1977; Grigg 1988; Chave and Malahoff 1988; Roark *et al.* 2006;