



## The invasive hydromedusae *Blackfordia virginica* Mayer, 1910 (Cnidaria: Blackfordiidae) in southern Brazil, with comments on taxonomy and distribution of the genus *Blackfordia*

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### Abstract

The invasive brackish-water hydrozoan *Blackfordia virginica* is reported from estuaries and harbours in southeastern and southern Brazil. Medusae of the species were collected for the first time in Cananéia, Guaratuba Bay, and Babitonga Bay. They were also found in Paranaguá Bay where they were previously known to occur. Based on material examined here, a comparative redescription is given of *B. virginica*, and its distribution worldwide is reviewed. The three nominal species of *Blackfordia* are assessed.

**Key words:** *Blackfordia virginica*, *Blackfordia manhattensis*, *Blackfordia polytentaculata*, estuaries, invasive species, Brazil

### Introduction

The widespread distribution of some species of Hydrozoa has sometimes been attributed to dispersal of the medusa stage (Orensanz *et al.* 2002). However, long-range dispersal of these cnidarians is more likely attributable to rafting of the sessile stages on phoretic substrates (Cornelius 1992a, 1992b; Calder 1993). Nevertheless, the actual frequency of successful dispersal of marine species over large distances is unknown (Knowlton 1993). In addition, some species of medusa have wide but discontinuous distributions, possibly constrained by specific habitat demands. Inferences about distributions of medusae must be based on adequate taxonomy and on an understanding of their natural history, including their invasive capacity and ecophysiological requirements. In this study, we address these issues in the case of species of the genus *Blackfordia*.

The genus *Blackfordia* Mayer, 1910 currently encompasses three species: *B. manhattensis* Mayer, 1910 (type species of the genus; type locality Sandy Hook, New Jersey, USA); *B. virginica* Mayer, 1910 (type locality Hampton Roads and Norfolk Harbor, Chesapeake Bay, USA); and *B. polytentaculata* Chen-tsu & Chin, 1962 (type locality the coast of Fujian province, China). The validity of these species has been questioned because of the polymorphic nature of some features that have been characterized as distinctive (Kramp 1959, 1961; Calder 1971; Moore 1987).

*Blackfordia manhattensis* and *B. polytentaculata* have been recorded with certainty only from their type localities. In contrast, medusae of *B. virginica* have been reported from estuarine areas in tropical and temperate waters of the Atlantic, Pacific, and Indian oceans (Paranaguá 1963; Naumov 1969; Bouillon *et al.* 1988; Genzano *et al.* 2006). *Blackfordia virginica* is well-known as an invasive species (Bouillon *et al.* 1988; Mills & Rees 2000; Álvares-Silva *et al.* 2003; Genzano *et al.* 2006) and its widespread distribution has been attributed to shipping (Kramp 1958).