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RESEARCH ARTICLE

Clarifying the taxonomic status of the alien species *Branchiomma bairdi* and *Branchiomma boholense* (Annelida: Sabellidae) using molecular and morphological evidence

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Abstract

This study was performed to analyse the genetic and morphological diversity of the sabellid annelid genus *Branchiomma*, with special emphasis on a taxon so far identified as *Branchiomma bairdi*. This species, originally described from Bermuda, has frequently been reported as an invader in the Mediterranean, the Atlantic and the Eastern Pacific, but recent observations have raised some taxonomic questions. Samples of this taxon were collected from five sites in the Mediterranean Sea, two sites in the original distribution area of *B. bairdi* in the Gulf of Mexico and four localities in the east Pacific and Atlantic Oceans where *B. bairdi* has been reported as invasive. The molecular results revealed a conspicuous genetic divergence (18.5% K2P) between the sampled Mediterranean populations and all the other ones that led to a re-evaluation of their morphological characters. The latter showed that the Mediterranean and extra-Mediterranean populations also differ in some discrete morphological and reproductive features. Consequently, the Mediterranean samples were re-designated as *B. boholense*, another non-indigenous species originally described from Philippines. *Branchiomma bairdi* and *B. boholense* differ in body size, development and shape of micro and macrostylodes, size of radiolar eyes and body pigmentation. Genetic diversity was high in *B. boholense* from the Mediterranean as well as in *B. bairdi* from the Gulf of Mexico, but low in *B. bairdi* populations outside their native range. The phylogenetic analysis revealed the presence of connections between the Mediterranean localities as well as between native and introduced *B. bairdi* populations that focus the attention on the Panama Canal as important passage for the introduction of the species from the Gulf of Mexico to the north-east Pacific Ocean.