Does early development of the Chilean tunicate *Pyura praeputialis* (Heller, 1878) explain the restricted distribution of the species?

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Abstract

Relationships between the rate of larval development and dispersal of a species can have a large influence on observed patterns of its distribution and abundance. Distribution patterns of the dense belt-forming rocky intertidal ascidians *Pyura praeputialis* and *P. stolonifera* (Urochordata: Ascidiacea: Pyuridae) show drastic differences. *P. stolonifera* extends along the coast of South Africa for 1000s of kilometers and *P. praeputialis*shows a similar range in Australia (New South Wales, Victoria and Tasmania). On the contrary, in Chile *P. praeputialis* is characterized by a population which occurs along less than 70 km of coastline in and around the Bay of Antofagasta. The larval and development characteristics of the South African and Australian species have been studied, while those of the population from Chile has not been described. This study describes the early embryology and larval development of the Chilean species and shows that the development times and the free-swimming larval stage of *P. praeputialis* in Chile and Australia are similar. Therefore, it is suggested that the differences in the extension of their range of distribution in Australia and Chile cannot be accounted for due to differences in the developmental biology, but it may be due to a recent invasion of the species to Chile. Comparison between the development biology of *P. praeputialis* and *P. chilensis* are also made.