



## MOLECULAR EVIDENCE FOR THE *Aegla jarai*, *A. odebrechtii*, and *A. parva* COMPLEXES FROM SANTA CATARINA, BRAZIL.

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Aeglids are the only anomuran crabs with a fully freshwater life cycle, and are exclusively distributed across South America, including Chile, Argentina, Bolivia, Paraguay, Uruguay, and Brazil (Claraval, Minas Gerais to Rio Grande do Sul). Although 100 species of *Aegla* Leach, 1821 are currently recognized, many remain undescribed. Recent integrative taxonomic studies have revealed significant cryptic diversity within species previously thought to exhibit broad distributions. This study focuses on three widely distributed species in Santa Catarina State, *Aegla jarai* Bond-Buckup & Buckup, 1994, *A. odebrechtii* Müller, 1876, and *A. parva* Bond-Buckup & Buckup, 1994, which have previously been proposed as potential species complexes due to their disjunct distributions. We examined specimens from 80 sites across the state obtained by sampling and biological collections, including the type localities of *A. jarai* (Correia Pinto) and *A. parva* (Águas Mornas). The type locality of *A. odebrechtii* was not specific in literature, but based on historical records, neotype comparison, morphological data, and molecular evidence, the population from São Cristóvão do Sul (Marombas river) was elect the closest locality. Phylogenetic analyses and species delimitation were conducted using three mitochondrial markers (COX1, COX2, 16S) including all (18) species recorded in Santa Catarina. In total, 90 sequences representing 18 valid species and 15 putative species were analyzed. Comparison with sequences from public databases (GenBank, BOLD) identified several misidentifications. To construct a reliable reference dataset, we sequenced type material or topotypes of valid species. Our results revealed a higher level of diversity than previously recognized, with two main lineages emerging. The first lineage groups *A. parva* closely with *A. parana* Schmitt, 1942 and *A. castro* Schmitt, 1942 (from Paraná State), forming a sister clade to *A. oblata*, consistent with previous morphological studies. The second lineage includes *A. jarai* and *A. odebrechtii*, along with sympatric species such as *A. spinosa* Bond-Buckup & Buckup, 1994 and *A. brevipalma* Bond-Buckup & Santos in Santos, Buckup, Pérez-Losada, Finley, Crandall & Bond-Buckup, 2012 from Santa Catarina State. Within this clade, nine putative species were identified. High levels of endemism were observed, with some putative species exhibiting highly conserved morphologies making their identification difficult, despite clear molecular delimitation. Understanding the taxonomic composition of these populations provides a critical foundation for elucidating biodiversity patterns, refining species distributions, and guiding conservation efforts. These findings are essential for developing accurate threatened species assessments and informing regional management strategies.

**Keywords:** Anomura, taxonomy, phylogeny.