

A new species of *Phrynops* from Southern Brazil (Testudines, Chelidae), with comments on the phylogeny of the genus

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Background. *Phrynops* present four valid species, including *P. geoffroanus* that might represents a complex of cryptic species. Here, we provide a preliminary analysis of the taxonomy and phylogenetic affinities within *Phrynops*, with special reference to the taxonomic status of populations of *P. geoffroanus* and *P. tuberosus*, and the recognition of a new species from Southern Brazil.

Methods. We studied populations from ten Brazilian river basins. A linear morphometric analysis was performed in order to define taxonomically distinct populations. Also, a phylogenetic analysis using morphology and molecular data (sequenced for the genes R35, RAG2, c-mos, cytb, ND4, and 12S) were carried out. Three distinct sets of phylogenetic analyses were performed: parsimony to morphological and combined data, and maximum likelihood to molecular data.

Results. The combined analysis shows that *Phrynops* represents a well supported clade. The set of skeletal data supports *Mesoclemmys* as the sister group of *Phrynops*, whereas the molecular and combined data sets show *Phrynops* as the sister group of a clade composed by all the remaining genera of Chelidae, except *Hydromedusa*. Our morphological analyses suggest that *P. hilarii* is the sister group of *P. geoffroanus*, but in both molecular and combined analyses, *P. hilarii* appears nested within the clade formed by the populations of *P. geoffroanus*. Furthermore, *P. tuberosus* and *P. geoffroanus* are not distinguishable by the set of osteological and morphometric data. On the other hand, both morphometric and osteological data show that the population of *P. geoffroanus* from the Paraná river basin is a distinct species.

Discussion. The sister group relationships of *Phrynops* could not be clearly defined due to the different topologies achieved. *Phrynops hilarii* is included within of *P. geoffroanus* in both molecular and combined data, but this position has little statistical support and therefore does

not express a clear position of *P. hilarii* within the genus *Phrynops*. Besides, we were not able to distinguish *P. geoffroanus* and *P. tuberosus*. However, a sampling of specific locations are still needed to objectively define the taxonomic status of *P. tuberosus*. Finally, the population of *P. geoffroanus* from the Paraná basin is clearly distinct from the remaining populations of this species. Qualitative osteological characters and morphometric results seem to demonstrate that this population is a new species of *Phrynops*.

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