

**Morphological comparisons of two life stages of the Silky shark *Carcharhinus falciformis* and the Daggernose shark *Carcharhinus oxyrhynchus* (Carcharhiniformes, Carcharhinidae) in light of phylogenetic characters of skeletal anatomy**

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**ABSTRACT**

The family Carcharhinidae, currently comprising 59 nominal valid species that occur circumglobally except on polar regions. Most of the phylogenetic hypotheses of Carcharhinidae are based exclusively on DNA sequences, in contrast to morphological data, whose consideration on this topic for the family remains largely missing. The large body size of adult carcharhinids turns the access of this kind of data often impractical and sometimes unfeasible on those specimens, thus restricting this kind of research to juvenile specimens. This body-size bias raises doubts about the accuracy of character-coding in the family. In order to investigate whether or not morphology significantly changes ontogenetically on carcharhinids, we here coded independently, for 144 morphological binary and multistate characters from external morphology and skeletal anatomy, two specimens (one juvenile and one adult) each of *Carcharhinus falciformis* and *Carcharhinus oxyrhynchus*. Our findings show that in *C. oxyrhynchus* all the character states remain unchanged across different those life stages, while in *C. falciformis* a single character – the fusion of radials on the mesopterygium – was coded differently in the juvenile and in the adult. Those results suggest that juvenile and adult specimens are mostly equivalent for morphological character-coding in phylogenetic analysis. Juveniles of both species were found to be a potentially reliable morphological proxy for adult condition for the characters considered and the size ranges examined. However, in order to better substantiate those results, additional taxa of Carcharhinidae still need to be analysed to confirm whether our results are indicative of this ontogenetic conservation of skeletal and external morphological characters in the family as whole. Nonetheless, the current work is an important initial step that, if confirmed for other Carcharhinidae, could facilitate phylogenetic studies of other Carcharhiniformes whose availability of adult specimens is rare or scarce.

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