A microanatomical and histological study of a femur of *Cricosaurus araucanensis* (Crocodylomorpha: Thalattosuchia)

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The fossil record of crocodylomorphs shows a wide morphological and ecological diversity. Within this clade, one of the most remarkable examples is Metriorhynchidae, the only group of archosaurs completely adapted to the pelagic marine environment. Although recently the number of contributions on bone histology of pelagic Mesozoic marine reptiles (*e.g.* ichthyosaurs, mosasaurs and plesiosaurs) has increase significantly the knowledge of microanatomy and histological features of these crocodylomorphs is comparatively scarce. Here we examined a cross section of a femur of *Cricosaurus araucanensis* (Gasparini and Dellapé) (Metriorhynchidae) recovered from lower Tithonian (Upper Jurassic) levels of the Vaca Muerta Formation exposed at Cerro Lotena in central western Argentina. This bone display a medullary cavity free surrounded by cancellous bone. The compact periosteal cortex is composed of a tissue with parallel fibered bone. Cyclic growth marks are present and in the deep cortex is predominantly composed of compacted coarse cancellous and present someone secondary osteons and few resorption cavities. Microanatomical and histological anatomy of *C. araucanensis* shows a relative loss of bone mass being consistent with the pattern observed in obligatory aquatic tetrapods. The decrease of bone density in the femur suggests that the body could not be supported out of the water without risk of bone damage. *Cricosaurus araucanensis* shares similar histological features with others metriorhynchids more than with teleosaurids, and contrasts with the general pattern observed in the bone microstructure of extant crocodilians. Within of Thalattosuchia *Cricosaurus araucanensis*, *Metriorhynchus* (Von Meyer), more than *Steneosaurus* (Geoffroy), suggesting histological adaptations to swimming in open seas and would have exploited off-shore superficial waters.

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