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Palaeohistology helps reveal taxonomic variability in exceptionally large temnospondyl humeri from the Upper Triassic of Krasiejów, SW Poland

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For more than twenty years, palaeontological excavations have been carried out at the Upper Triassic site of Krasiejów (south-west Poland), providing thousands of skeletal elements belonging to various tetrapod groups. However, almost all bones are preserved in a disarticulated state. This generates problems in taxonomic assignment among closely related groups, e.g., stereospondyl amphibians. As far as cranial elements, the pectoral girdle bones and the intercentra are very diagnostic, while all other remaining skeletal elements are difficult to unambiguously assign between either the capitosaurid *Cyclotosaurus intermedius* or the trematosaurid *Metoposaurus krasiejowensis*, both originating from Krasiejów. Because comparative postcranial material from other Triassic localities worldwide is very rare or even absent, assignment on a genus level is even more problematic. With the help of bone histology, we tested the taxonomic assignment of two exceptionally large humeri with only marginally differing morphology. Both humeri show lamellar-zonal bone and preserve between four to seven visible growth cycles, but with a markedly different amount of primary tissue, a varying degree of remodelling and distinct growth patterns. Considering the fact that both humeri are almost the same size, they show different histological ontogenetic stages, implying an assignment to two different genera. UOBS 02116 shows limited remodelling, with a large amount of primary bone preserved as alternating thick zones and thin annuli, it is considered to represent *C. intermedius*. UOBS 02116, showing limited remodelling, with a large amount of primary bone preserved as alternating thick zones and thin annuli, and considered to represent *C. intermedius*. UOBS 02431, showing advanced remodelling, residuals of primary bone, distinctly decreasing thickness of zones towards the outer cortex, and thick annuli, is assigned to *M. krasiejowensis*. This study shows that temnospondyl amphibians might show only minor differences in humeral morphology, making histology an even more valuable tool for taxonomic assignment at a genus level.

Key words: Amphibia, Temnospondyli, Capitosauria, *Cyclotosaurus* , palaeohistology, Late Triassic, Krasiejów, Poland.

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