

SCHOCH, R.R. 2003. The early larval ontogeny of the Permo-Carboniferous temnospondyl *Sclerocephalus*. *Palaeontology*, 46: 1055-1072.

ABSTRACT

The early larval development of the temnospondyl *Sclerocephalus* sp. is analyzed, based on 38 specimens from the Lower Rotliegend (Permo-Carboniferous boundary) of the Saar-Nahe Basin (south-west Germany). The study focuses on the smallest larval specimens, which exemplify changes in both proportions and ossification patterns. In comparison with dissorophoid larvae, the skull ossifies more fully and at a much faster rate; the smallest specimens already have completely formed circumorbital bones that are sutured throughout. Sculpturing undergoes two marked changes, first from uniformly pitted to pits of variable size and regional differentiation, and finally to the origin of ridges. The palate of small larvae differs from that of larger specimens in patterns of dentition, having more teeth including a denticle field on the cultriform process. The mandible of small larvae is described for the first time, being narrower than in adults and having three dentigerous coronoid elements. The smallest specimens have poorly ossified neural arches, lack vertebral centra, and have faintly ossified humeri, femora, and very poorly developed distal elements. The posterior ribs, metapodia, and phalanges appeared after the dermal elements of the pectoral girdle, whereas the scapulocoracoid and ischium are absent throughout the larval period. Early growth and differentiation of the limbs and the ilium illustrates the developmental patterning of the appendages, which proceeded from proximal to distal. Dermal squamation is uniform in small stages, consisting of round or oval osteoderms with pronounced growth rings; in large larvae, they start to differentiate in certain body regions.