

## The Triassic Amphibian *Thoosuchus yakovlevi* and the Relationships of the Trematosauroidea (Temnospondyli: Stereospondyli)

ROSS J. DAMIANI<sup>1\*</sup> AND ADAM M. YATES<sup>2</sup>

<sup>1</sup> Bernard Price Institute for Palaeontological Research,  
University of the Witwatersrand, Private Bag 3, Wits 2050, Johannesburg, South Africa  
damianir@geosciences.wits.ac.za

<sup>2</sup> Department of Earth Sciences, University of Bristol, Bristol BS8 1RJ, United Kingdom  
adam\_m\_yates@yahoo.co.uk

**ABSTRACT.** A skull of the basal trematosauroid temnospondyl *Thoosuchus yakovlevi* from the Early Triassic of Russia is described. Characters showing phylogenetic affinities with the Trematosauroidea include the presence of a postorbital-prepineal growth zone, the well-developed sensory sulci, the ventrally knife-edged cultriform process of the parasphenoid, and the posteriorly expanded parasphenoid body. A preliminary phylogenetic analysis of trematosauroid relationships confirms that *Benthosuchus* is a basal trematosaurian rather than a basal mastodonsauroid, and that *Thoosuchus* is the sister group to all other trematosauroids. Relationships within the Trematosauroidea are poorly established with as yet little evidence for subdivision of the group as previously proposed. In addition, the hypothesis that the Metoposauroidea is nested within the Trematosauroidea is supported. However, the Trematosauridae *sensu stricto* appears to be paraphyletic. The basal stereospondyl dichotomy between the Mastodonsauroidea and its relatives (the Capitosauria), and the Trematosauroidea and its relatives (the Trematosauria), is supported, and now seems well established.

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The Trematosauridae is a diverse and cosmopolitan group of temnospondyl amphibians known from the Early, Middle and Late Triassic, and from all continents except South America and Antarctica. A review of the fossil record of trematosaurids can be found in Schoch & Milner (2000). Typical trematosaurids are distinctive in possessing narrow, moderately to highly elongated snouts with large palatal fangs, paired anterior palatal vacuities, an expanded postorbital-prepineal growth zone, a knife-edged cultriform process of the parasphenoid, an elongated basicranium, and a ventrally underplated exoccipital. The Trematosauridae is traditionally subdivided into two or three taxonomic groups, the highly-derived long-snouted Lonchorhynch-

inae, which make their first appearance in the earliest Triassic, and the short-snouted Trematosaurinae and Lyrocephalinae, which appear later in the Early Triassic (Säve-Söderbergh, 1935; Cosgriff & Garbutt, 1972; Hammer, 1987; Welles, 1993). Although most trematosaurids are easily recognizable as either lonchorhynchine or trematosaurine/lyrocephaline, the relationship between these subgroups is unclear because of their morphological disparity, the temporal gap, and the fact that the apparently more primitive taxa appear later in the fossil record. This has led to suggestions that the Trematosauridae may be diphyletic in origin (Bystrow & Efremov, 1940; Shishkin, 1964; Welles, 1993). Hence, this subdivision may simply

\* author for correspondence