

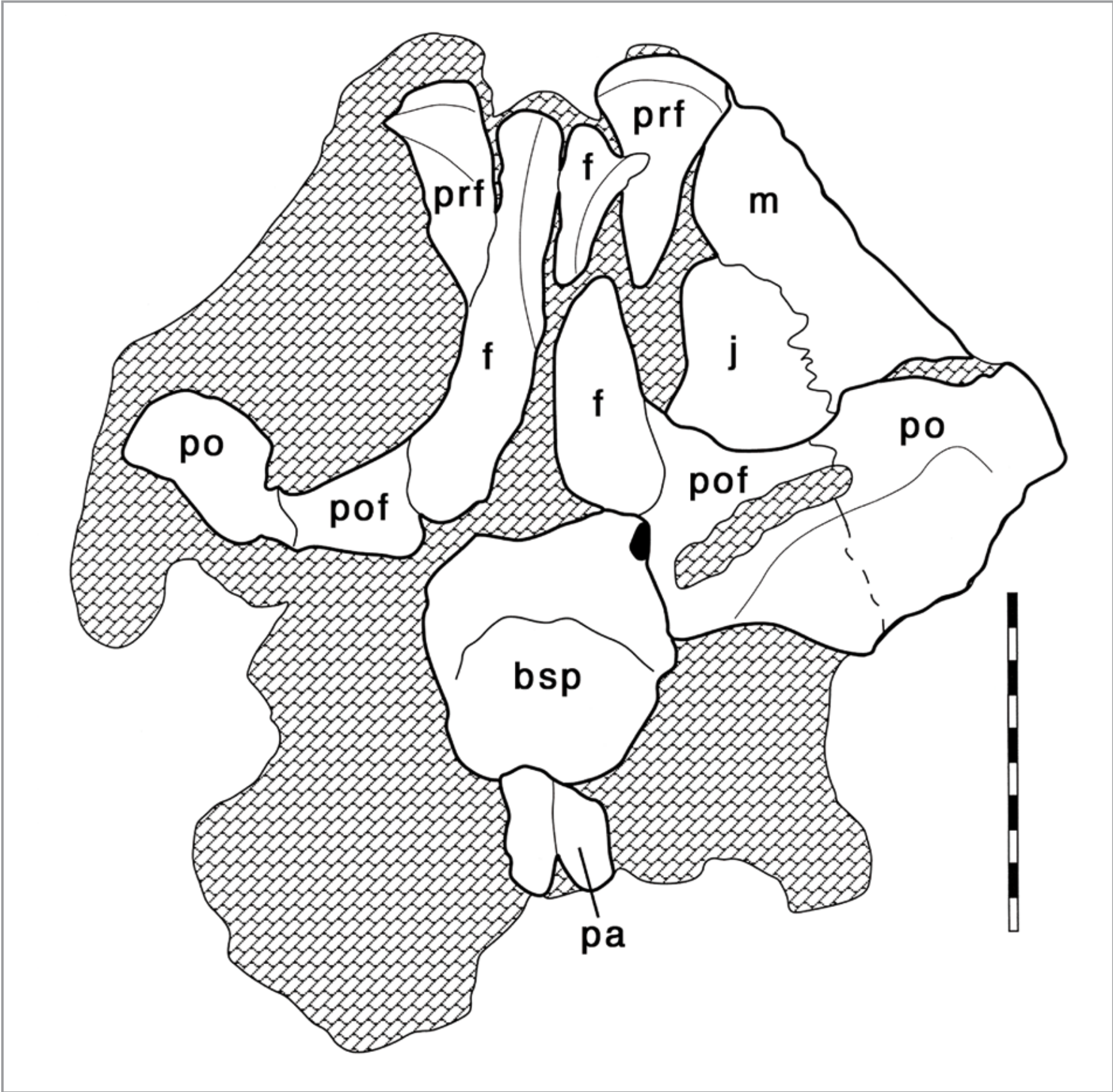
A new taxon of sphenodontian with unusual dentition

from the Late Jurassic of Southern Germany

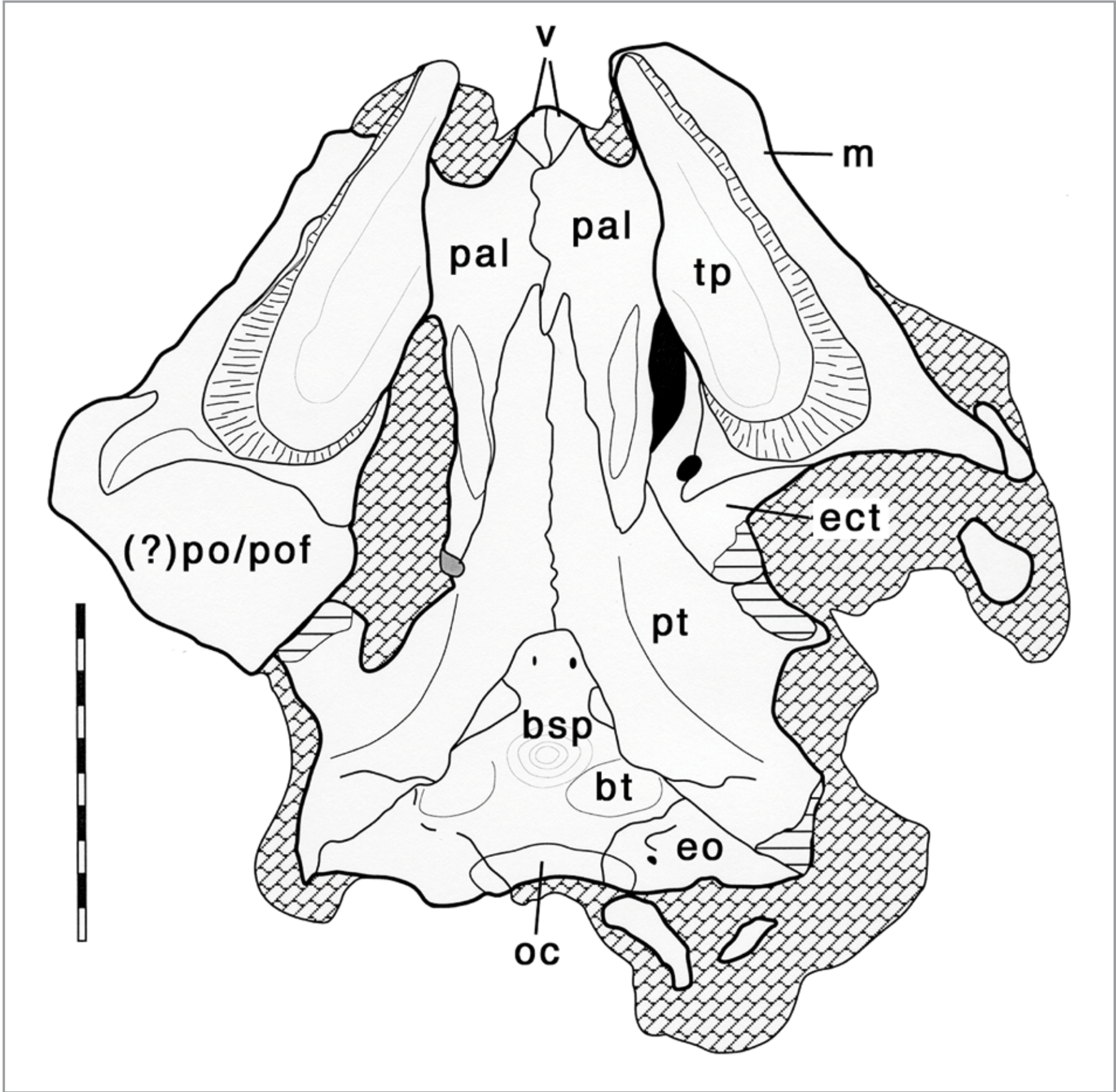
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Although the only recent representative of the Sphenodontia, the genus *Sphenodon*, is often used as a “classic” example of a living fossil, research in the recent decades has shown that this clade was widespread and both taxonomically and ecologically diverse during the Mesozoic. All sphenodontians but the most basal forms are characterized by a special, acrodont dentition, in which a juvenile dentition is retained throughout the ontogeny, and new teeth are added posteriorly in the jaws. Recently, the partial skull and mandibles of a new taxon of sphenodontian have been discovered in the marine Tithonian Mörnsheim Formation in Bavaria, southern Germany. Although the skull roof and braincase are fragmentary, the palate and lower jaws are excellently preserved.

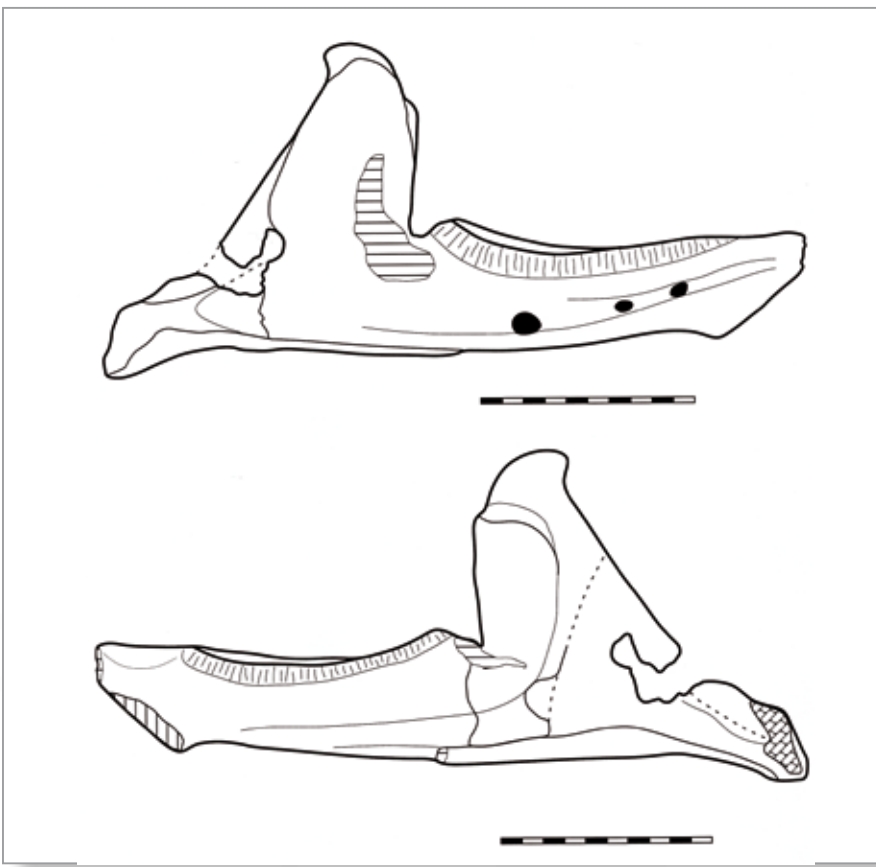
The most conspicuous character, however, is the very unusual dentition, which consists of large lateral tooth plates in the maxilla and dentaries. This character strongly indicates a durophagous diet in the new taxon. The tooth plates are formed by the fusion of numerous, small, pencil-like teeth, very unlike the typical tooth shape in sphenodontians, and there is no distinction between a juvenile tooth row and additional teeth. Nevertheless, phylogenetic analysis indicates that the new taxon is well nested within sphenodontians that have the typical type of dentition of this clade; thus, its tooth plates should be derived from an acrodont dentition with retention of a juvenile dentition and posterior aggregation of additional teeth. This indicates a surprisingly high evolutionary plasticity in the dentition of derived sphenodontians. A possible evolutionary origin for this dentition might be the heterochronic retention and subsequent modification of small, more conical teeth, as they are found in hatchlings of the recent *Sphenodon*.



Detailed drawing in dorsal view of the fragmentary preserved skull of the new sphenodontian taxon.



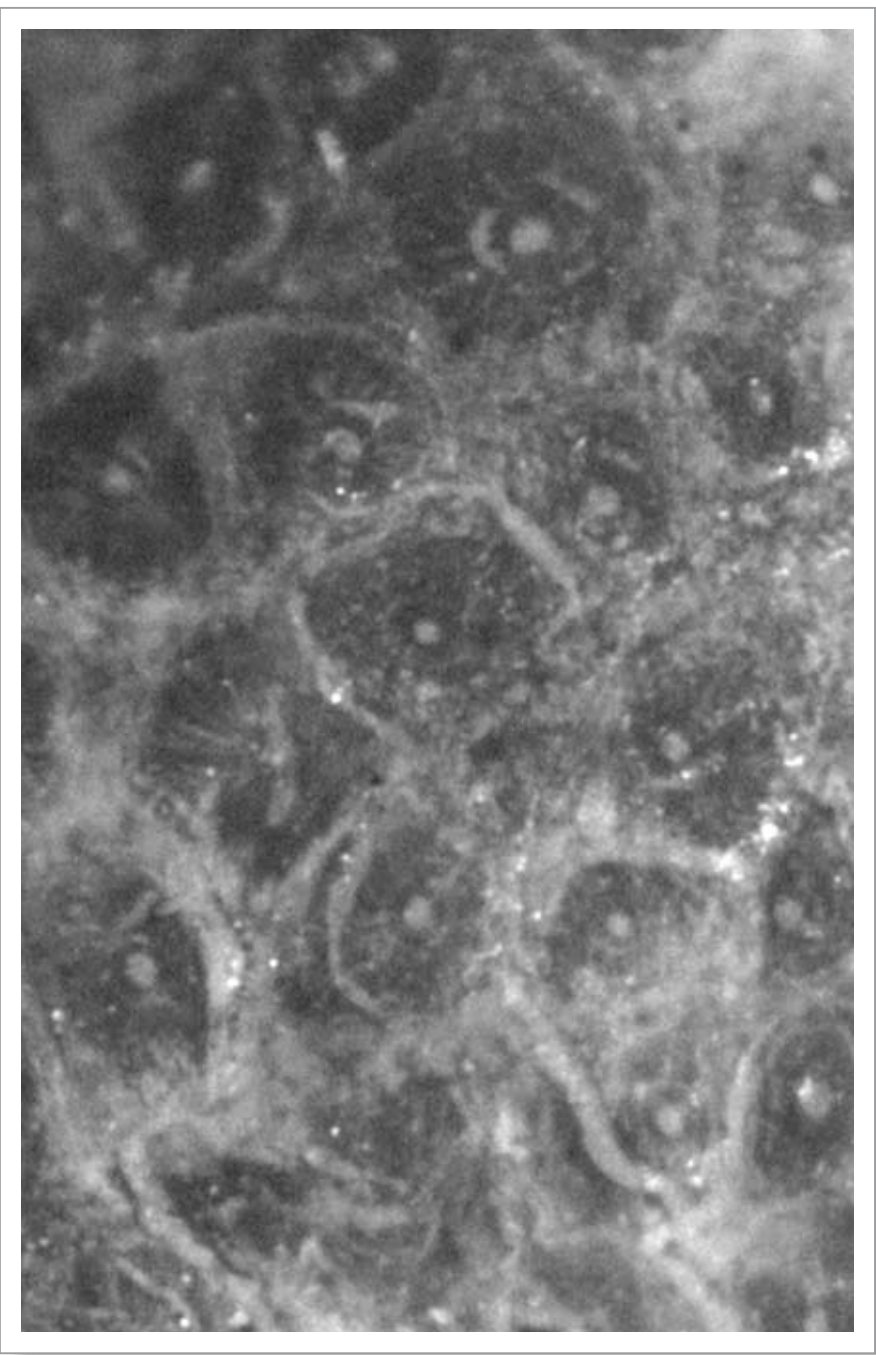
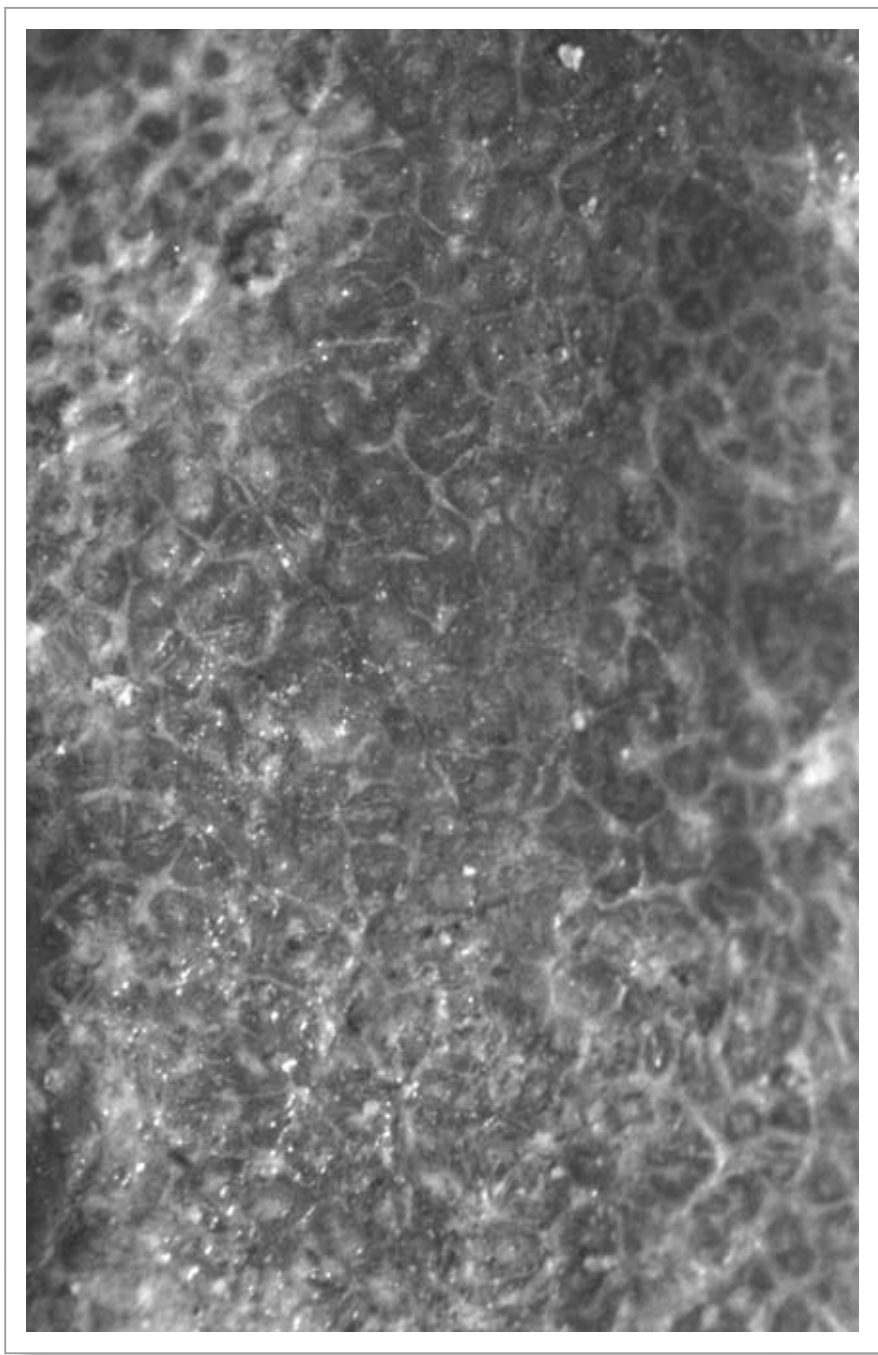
Detailed drawing in ventral view of the fragmentary preserved skull of the new sphenodontian taxon.



Sketch of the excellently preserved lower jaw.



The phylogenetic tree indicates that the new taxon is well nested within sphenodontians.



Enlarged view of the lateral tooth plate formed by the fusion of numerous, small, pencil-like teeth.



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