

NEW GENOTYPE DESIGNATIONS FOR THE PHYTOSAURS MYSTRIOSUCHUS  
AND RUTIODON WITH A DISCUSSION OF THE TAXONOMIC STATUS OF  
MYSTRIOSUCHUS, CLEPSYSAURUS AND RUTIODON

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Abstract-A partial skull of Mystriosuchus (MCZ 1018), originally described by Meyer (1863), is designated as the lectotype of Mystriosuchus planirostris (Meyer, 1863). A skull from Trossingen, described by Huene (1911), probably belongs in this genus, but not in the species M. planirostris. A skull of Rutiodon (Williams College, uncatalogued), originally described by Emmons (1860) is designated the a neotype of Rutiodon carolinensis Emmons, 1856. Clepsysaurus pennsylvanicus Lea, 1851 is a nomen dubium.

A LECTOTYPE FOR MYSTRIOSUCHUS

Meyer named Belodon for a variety of teeth from the Stubensandstein of Wurttemberg (Meyer, in Meyer and Plieninger, 1844). The type species Belodon plieningeri includes short laterally compressed blade teeth (Meyer and Plieninger, 1844, plate 12, fig. 20) and more elongate teeth (Meyer and Plieninger, 1844, plate 12, fig. 21). At least some of Meyer's Belodon and Belodon(?) teeth are identifiable as phytosaurs (Meyer and Plieninger, 1844, plate 12, figs. 18-21, 23), but isolated phytosaur teeth have not proven to be of any taxonomic utility, despite the work of Murry (1982). Meyer (1861, p. 346) then referred relatively complete material of a "kleineren Form" to Belodon plieningeri and separated it from Belodon kappfi, a "grosseren Form" with a more robust rostrum. Then, in 1863, Meyer proposed a third species of Belodon, B. planirostris, based upon skull fragments and two scutes (Meyer, 1863, plate 10, figs. 1-11).

Fraas (1896, p. 16) named the new phytosaur genus Mystriosuchus with the type species M. planirostris and distinguished it by the fact that the teeth decreased in size from anterior to posterior, whereas in Belodon kappfi, except for the caniniforms, teeth increase in size from anterior to posterior. This feature is not found in all Mystriosuchus skulls (McGregor, 1906). The other distinctive feature cited was that Mystriosuchus teeth are not smooth with sharp edges, but are weakly grooved with a circular cross section (Fraas, 1896, p. 16). Fraas (1896) based his taxonomic decision on several new specimens of Mystriosuchus, including a virtually complete skull with lower jaws (Fraas, 1896, plate 5). Most subsequent authors have considered Mystriosuchus a valid genus (e.g., Camp, 1930; Gregory, 1962a; Westphal, 1978; Chatterjee, 1978; Ballew, 1989).

One further complication in the history of Mystriosuchus was the assignment by Huene (1911) of a skull from Trossingen to Mystriosuchus plieningeri as a new combination. This skull

later authors and was the chief piece of evidence for the congeneric status of plieningeri and planirostris in Mystriosuchus (Huene, 1911) or Belodon (Westphal, 1963). Gregory and Westphal (1969, p. 1296) examined the Trossingen skull and concluded that it represented "an unusually large and somewhat aberrant" specimen of Mystriosuchus planirostris. Although the Trossingen skull is grossly similar to the skull of Mystriosuchus planirostris and appears to have similar shaped squamosals (compare Fraas, 1896, plate 5 and Huene, 1911, plate 12), it differs in a number of ways. It differs in having a more massive rostrum (Gregory and Westphal, 1969), less well-rounded antorbital fenestrae, in exclusion of the jugal from the antorbital fenestra, external nares depressed well below the skull table and a less abrupt contour between the external nares and the rostrum. The latter two differences cannot be wholly explained by deformation (cf. Gregory and Westphal, 1969). These differences are particularly important as skulls of M. planirostris show less intraspecific variation than other phytosaur taxa. The Trossingen skull undoubtedly represents a new taxon, probably a new species of Mystriosuchus.

Fraas (1896) illustrated a complete skull of Mystriosuchus planirostris and later obtained other skulls and articulated remains that were described by McGregor (1906). Subsequently, the material upon which Meyer originally based B. planirostris has been ignored. No holotype of lectotype was ever designated. Here we designate as a lectotype of Mystriosuchus planirostris a specimen (Fig. 1) in the Museum of Comparative Zoology at Harvard University (MCZ-1018). This is the skull fragment illustrated by Meyer (1863, plate 10, figs. 1-11). The original specimen label is written in German in black and red ink. The label indicates that MCZ-1018 was originally numbered 4361 and is the "Original Exemplar" of "Belodon planirostris" described by Meyer and is from the Stubensanstein at Aixheim. A more recent label indicates that the specimen had an intermediate number of 7512. From labels on other specimens (see below) it is apparent that this number should have an acronym of BSNH (?Bayerische Staatssammlung für Naturgeschichte und Historie). The specimen was a gift of John Cummings and was originally part of the Eser collection. The latter is presumably the Eser collection, originally in the Ulm Gymnasium, mentioned by Fraas (1896, p. 16).

With the lectotype are five other pieces. MCZ 1019 (Eser 4369; BSNH 7520) consists of a rostral fragment (MCZ 1019A) (Meyer, plate 10, figs. 4-5), a rostral fragment (MCZ 1019B) with a partial tooth in place (Meyer, plate 10, figs. 7-8) and MCZ 1019C, a rostral fragment illustrated by Meyer (1863). MCZ 1022 (originally 4367; BSNH 7518) is a dorsal skull fragment (MCZ 1022A) with deep sculpturing and a partial caudal centrum (MCZ 1022B). MCZ 1022 was not illustrated by Meyer (1863). We designate MCZ 1019 and MCZ 1022 as paralectotypes, because it cannot be determined with certainty that they are part of the lectotype specimen.

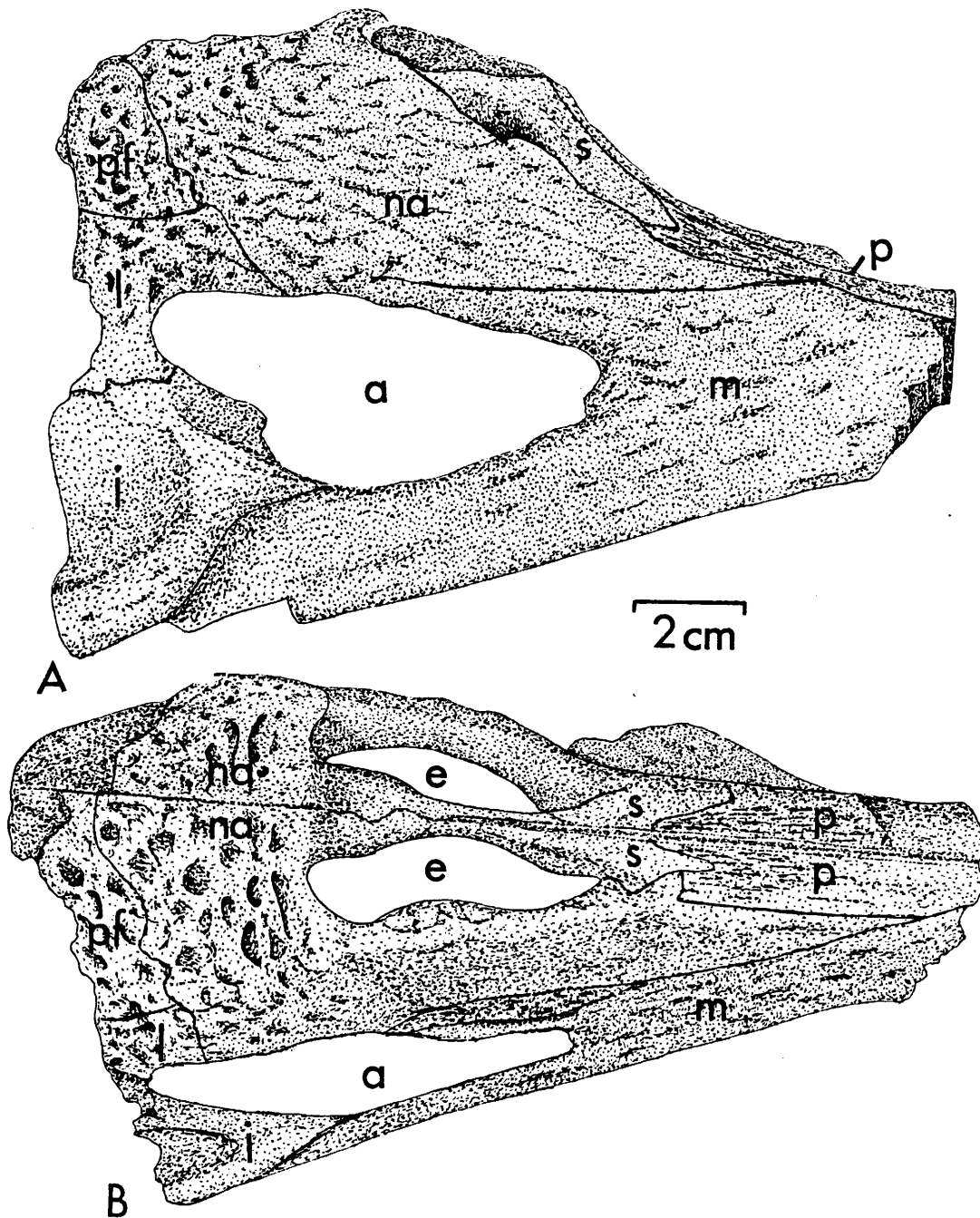


FIGURE 1. A-B, Lectotype of *Mystriosuchus* (MCZ 1018). A, Lateral view of right side. B, dorsal view. Abbreviations are: a, antorbital fenestra; e, external nares; j, jugal; l, lachrymal; m, maxilla; na, nasal; p, premaxilla; pf, prefrontal; s, septomaxilla.

## Systematic Paleontology

Genus Mystriosuchus Fraas, 1896

Type species: Mystriosuchus planirostris (Meyer, 1863).

Synonym: Belodon Meyer, 1863 (in part).

Lectotype: MCZ-1018; part of skull originally illustrated by Meyer (1963, plate 10, figs. 1-3) comprising a fragment from just anterior of the orbits to anterior of the antorbital fenestra; right lateral and dorsal surfaces are well preserved; ventral surface is missing posteriorly; and the left lateral face is essentially lacking (Fig. 1).

Paralectotypes: MCZ 1019A-C, rostral fragments; MCZ 1022A, dorsal skull fragment; MCZ 1022B, partial caudal centrum.

Locality: Aixheim, Wurttemberg, Federal Republic of Germany.  
Horizon: Stubensandstein.

Age: Early to middle Norian (Late Triassic).

Distribution: Stubensandstein of Germany.

Revised Diagnosis: Small phytosaur with external nares which lie above the anterior half of the antorbital fenestra and are not raised above the level of the skull roof (contra Ballew, 1989) unlike Pseudopalatus/Nicrosaurus (Ballew, 1989; Murry and Long, 1989); squamosal process truncated and not rounded, unlike other phytosaurs except Paleorhinus and the Trossingen skull; postorbital bar wide, which contrasts with Rutiodon; supratemporal fenestrae greatly depressed which differs from Paleorhinus and Angistorhinus; skull roof, particularly nasals and frontals, deeply sculptured which contrasts with Rutiodon, Pseudopalatus/Nicrosaurus and Belodon kapfii; median septum of external nares has perpendicular anterior margin which is visible in lateral view above the lateral margins of the external nares which have rounded anterior margins, a feature which differentiates it from other phytosaurs; compressed, inverted U-shaped parietal-supraoccipital complex which differs in degree from Pseudopalatus/Nicrosaurus (Ballew, 1989); teeth homodont, unserrated, longitudinally grooved and relatively widely spaced which differs from most species of Rutiodon, Pseudopalatus/Nicrosaurus and Belodon kapfii; rostrum elongate and slender unlike Belodon kapfii.

Discussion: Depression of the external nares below the skull roof and the squared-off squamosal process indicate that Mystriosuchus is not closely related to Nicrosaurus/Pseudopalatus (contra Ballew, 1989). Pending phylogenetic analysis, it appears more probable that Mystriosuchus is more closely related to Paleorhinus (cf. Gregory, 1962a; Chatterjee, 1978) or Rutiodon and represents parallel evolution within the phytosaurs. The general form of the skull of Mystriosuchus planirostris, and of the neotype of Rutiodon designated below, is of a slender snouted phytosaur with widely-spaced teeth, and this probably represents a neotenus condition (Camp, 1930; Colbert, 1947).

A NEOTYPE FOR RUTIODON AND THE STATUS OF CLEPSYSAURUS

Lea (1851a, p.172) first applied a specific name,