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1977
Bernard Price Institute for Palaeontological Research
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Palaeont. afr., **20**, 111–113 (1977)

A REASSESSMENT OF *PHRYNOSUCHUS WHAITSI* BROOM

by

Sharon Chernin and J. W. Kitching

ABSTRACT

Phrynosuchus whaitsi Broom 1913, from either the *Tapinocephalus* or *Cistecephalus* zones of South Africa, is reassessed and is now considered a *nomen vanum* due to the poor state of preservation of the specimen. The specimen shows some rhinesuchid characters, and is tentatively assigned to *Rhinesuchus* sp. indet. and in all probability is that of a juvenile.

INTRODUCTION

Phrynosuchus whaitsi Broom 1913

Locality

Droogvoets, Fraserburg, Cape Province.

Zone

Tapinocephalus or *Cistecephalus* (Broom, 1913, *"Endothiodon"*)

In reconsidering the locality Droogvoets, Fraserburg, given by Broom (1913) as *"Endothiodon"* zone, it has been established in more recent years that both the uppermost horizons of the *Tapinocephalus* and the lowermost horizons of the *Cistecephalus* zone are exposed in the area around Fraserburg. So the horizon of *Phrynosuchus whaitsi* is unreliable, although it seems from the morphology or texture of the very hard matrix that the specimen in all probability came from the former zone.

Phrynosuchus has only been referred to on two occasions since it was described by Broom (1913) — probably due to its state of preservation — by Haughton (1925) and by Romer (1966).

Romer (1966, p. 363) assigns this "type" to the family Brachyopidae, probably based on Broom's drawing which gives the impression that the skull outline is parabolic. However, the relative position of what is left of the orbital margins and the approximate position of the orbits as well as the oblong and lateral position of the nares close to the lateral margins of the skull seem to indicate that the specimen in all probability belongs to the family Rhinesuchidae.

State of preservation of type skull S.A.M. 235F

Further preparation has been undertaken by one of the authors, J. W. Kitching, along the perimeter of the skull, and based on what is discernible of the skull an attempt at a redescription and reinterpretation is given in the following paragraphs.

The skull is embedded in a hard fine-grained sandstone containing biotite and is badly weathered, depressed and distorted. The posterior half of the skull together with a small part of the postfrontal is preserved as an impression. In places on the matrix faint traces of sutures are discernible.

Part of the left side and the anterior region of what was most probably also represented as an impression is completely missing, so that part of the much crushed and distorted anterior palatal region is exposed. Only a small part of the posterior border of the left orbit is preserved as an impression while the right orbit is badly distorted.

Posteromedially, in the area of the occipital region there is a projection of thin bone underlying the skull which could either be interpreted as severely flattened occipital condyles or as part of the pectoral girdle — possibly the interclavicle. Due to the thinness of the bone it could in all probability be assigned to the latter as it is almost inconceivable that the occipital condyle could have been flattened to such an extent by distortion and into such a shape.

The hardness of the matrix and exceptionally depressed state of the specimen unfortunately prevent further preparation of the palatal or ventral region of the skull.

An almost complete right as well as the greater part of the left mandibles are preserved, but due to compression these are firmly attached to the skull.

The following is a brief description of what can be discerned of the respective bone structures of the skull.

Postparietal. The postparietals are relatively large, square-shaped bones which are in the normal rhinesuchid position.

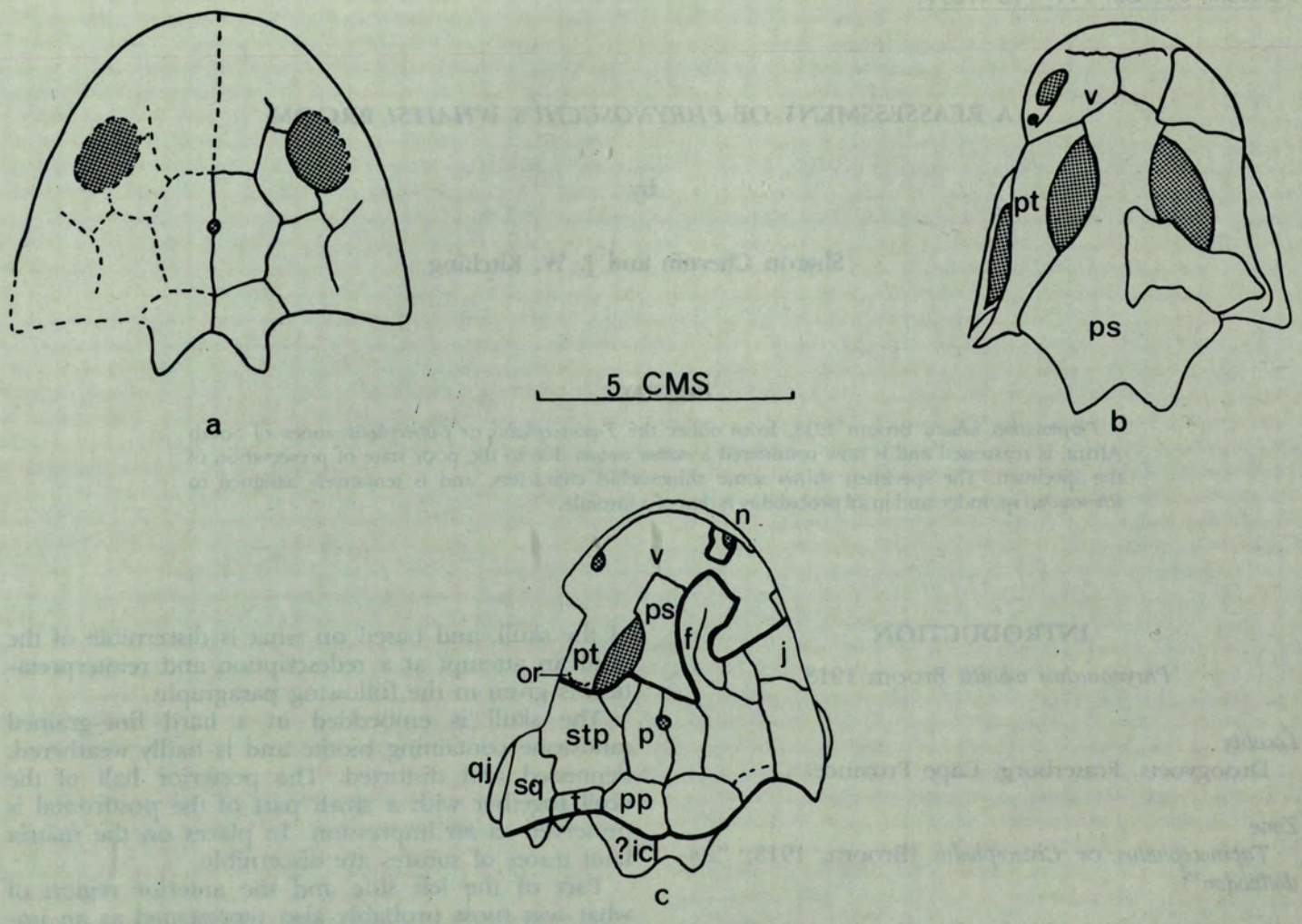

Figure 1. a. *Phrynosuchus whaitsi*. After Broom, 1913.
b. *Phrynosuchus whaitsi*. Dorsal view of palate. After Haughton, 1925.
c. *Phrynosuchus whaitsi*. Reassessment of dorsal view of skull.

Major portion of tabular. The anterior suture of the left tabular runs transversely and its lateral posterior limit appears to have been produced outwards to form a finger-like tabular horn.

Squamosal. The squamosal lies lateral to the tabular as in *Rhinesuchus*. The squamosal has been depressed in such a way that it seems to have a posterior projection behind the skull table in the probable position of the otic notch. The shape of the squamosal is thus very distorted.

Quadratojugal. Lateral to the squamosal lies the strap-shaped quadratojugal, which conforms in shape and position to that of *Rhinesuchus*.

Parietal. The parietals lie anterior to the postparietals, abutting on the mid-line. The anterior limits of the parietals are missing. A fairly large circular parietal foramen lies within the parietals on the midline, almost halfway along their length.

Supratemporal. Posterolateral to the parietals on the left side lies the only preserved supratemporal whose sutures, where visible, are highly distorted with regard to their position. However, the supratemporal seems to be a relatively large bone.

Postorbital. The postorbital is clearly preserved on the right side of the skull, but on the left side no definite sutures can be differentiated.

Postfrontal. The postfrontal is a curved bone which follows the line of the rim of the orbit. On the right side of the skull, the postfrontal extends from a lateral, longitudinal suture with the postorbital following a curved suture medially, presumably with the frontal which follows the curvature of the orbit. The anterior limit of the postfrontal is not preserved. The postfrontal forms part of the medial border of the orbit. The positions of the postorbital and postparietal are indicated in the reconstruction.

Orbits. Only a small part of the left posterior border of the orbit is preserved. The orbits are situated almost in the mid-length of the skull roof slightly more within the posterior part of the skull and, before distortion, were probably closer together.

Nares. The shape and position of the nares are indicated by a small piece of the nasal bone, preserved as an impression, on the right side and which lies disarticulated on the dorsal surface of the palate. The nares were oblong, average in size, with their long axes parallel to the lateral borders of the skull, very similar to those in the Rhinesuchidae.



Figure 2. Stereo view of the dorsal surface of the skull of *Phrynosuchus whaitsi* Broom.

The palate. A very flattened cultriform process of the palate meets a fused complex of vomer and palatines in a sharp, almost triangular, anterior point. The shape of the anterior part of the interpterygoid vacuity as seen dorsally is indicative of the normal rhinesuchid structure. Numerous small teeth are present along the outer edge of the premaxillae and maxillae whose limits are not known. No other sutures are discernible on the palate as preserved.

DISCUSSION

From the foregoing it is evident that only insufficient information can be gained from the specimen as preserved and it is thus suggested that *Phrynosuchus whaitsi* be considered a *nomen vanum.* With the almost mid-length position of the orbits in the skull roof and other scanty information, a rhinesuchid-like creature is indicated, and it is proposed that this specimen be assigned as *Rhinesuchus* sp. indet., possibly that of a juvenile.

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LIST OF ABBREVIATIONS

f	— frontal
icl	— interclavicle
j	— jugal
n	— nasal
or	— orbit rim
p	— parietal
pp	— postparietal
ps	— parasphenoid
pt	— pterygoid
qj	— quadratojugal
sq	— squamosal
stp	— supratemporal
t	— tabular
v	— vomer