PTEROSAUR REMAINS FROM THE CENOMANIAN (LATE CRETACEOUS) PARALIC DEPOSITS OF CHARENTES, WESTERN FRANCE

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Rather numerous pterosaur remains, although mostly fragmentary, have been described from the Cretaceous of France (see Knoll and Bouveur, 2001; Mazin et al., 2001). They mainly consist of isolated bones collected in the Early Cretaceous and latest Cretaceous (Campanian-Maastrichtian) strata, as illustrated by two recent papers on French pterosaurs (Buffetaut, 2001, 2004). The Cenomanian deposits of the Charentes region, in western France, have yielded a few pterosaur remains (Néraudeau et al., 2005; Vullo et al., 2005; Vullo, 2007) which are described herein. This material constitutes the only known Cenomanian occurrence of pterosaurs from France, and completes our knowledge of the earliest Late Cretaceous peri-Tethyan pterosaur fauna.

Groups and taxa used in the present study are those defined by Unwin (2003) in his phylogenetic analysis.


**DESCRIPTION**

**Dental Remains**

Only a few teeth have been collected in the Cenomanian localities of Charentes. However, two dental morphotypes can be distinguished. The first one (morphotype A) is represented by a unique tooth collected at Fouras-Vaupan (Fig. 2A–D). This rather slender tooth, 17 mm long, is labiolingually compressed and apically worn. It is recurved labially and distally. The cross-section is oval near the base and becomes eye-shaped toward the apex. Enamel is smooth and is only present on the apical part (mainly on the labial surface), with narrow expansions along both mesial and distal edges. Carinae are poorly developed and restricted to the enamelled part of the crown. The unenamelled basal area displays on its surface some very slight growth folds, concave toward the apex.

The second morphotype (morphotype B) corresponds to smaller teeth, whose length ranges from 3.8 to 12 mm (Fig. 2E–J). They are weakly curved labiolingually, but are not recurved distally. In lateral view, the crown is straight or slightly sigmoidal: the mesial edge is convex near the base and concave near the apex while the distal edge is subrectilinear. The crown surface is smooth. Enamel shows a similar pattern to that observed in the morphotype A. However, the enamelled area is here more developed toward the base of the tooth, representing about half the total height of the crown. The smallest specimen (Fig. 2E–G), straighter and devoid of real carinae, may correspond to a juvenile tooth. However, it can be included within the dental morphotype B. It is worth noting that the more the teeth are large, the more they are sigmoidal in lateral view (Fig. 2I–J). Considering that all the teeth of morphotype B originate from the same species, this dental difference might be interpreted as an ontogenetic variation in tooth morphology between juveniles and adult individuals.

**Postcranial Remains**

The pterosaur bones, consisting of two isolated fragments, have been recovered from the locality of Fouras Bois-Vert. These bones, oval to bean-shaped in cross-section, are completely hollow and have very thin walls (up to 1 mm). They show numerous cracks and are slightly flattened. Articular ends are missing in both specimens. However, the first specimen (60 mm in length) shows several anatomical features that correspond to the greater trochanter of a large, the more they are sigmoidal in lateral view (Fig. 2I–J). Considering that all the teeth of morphotype B originate from the same species, this dental difference might be interpreted as an ontogenetic variation in tooth morphology between juveniles and adult individuals.

The second bone (84 mm in length) has rectilinear edges. Its diameter slightly widens at one end (Fig. 3D–G). That indicates this fragment might come from the proximal part of a first?