Comments on the manuscript "A revision of the deep-water teleosauroid crocodylomorph *Teleosaurus megarhinus* Hulke, 1871 from the Kimmeridge Clay Formation (Late Jurassic) of England, UK".

The paper provides a revision of the teleosauroid species *T. megarhinus*, providing new material. The original material is poor (an anterior portion of a snout), and the new material is also poor (an anterior extremity of a snout). The authors consider that *T. megarhinus* is a valide species and erect a new genus name.

If the description is good and well itemized, I strongly disagree with the characters used in the diagnosis as with some from the comparison. I agree that *T. megarhinus* is probably a valid species, supported by some characters, but these characters are fewer that suggested in the paper. Most of those used to diagnose the new genus are not clear and disputable (I discus that in detail below). They can be found in many thalattosuchians. Most of them are related to the shape of the anterior part of the snout, but this part is often strongly deformed in most of the thalatosuchians specimens and this strongly influence our interpretation of the character. This deformation has not been considered in the paper while it is often strong in thalattosuchians (in particular in specimens from Oxford Clay (Vignaud, 1995)). The specimens presented here are also deformed. If some characters suggest the validity of the species, I think that erect a new genus name is too daring. First, it is mainly based on two fragments of anterior extremity of two snouts (it was not possible to provide comparison with a lost complete French skull), and second, the teleosauroid phylogeny is particularly unclear, and the relationships of *T. megarhinus* could strongly varies in the future, the poor preservation of the remains (only anterior portion of snout) will probably increase this instability.

The result of the phylogenetic analysis and relationships of *B. megarhinus* should be presented with more carful du to the poorness of the specimens.

I invite the authors to develop and precise the morphological points I discussed below to eliminate all possible doubt (as mine).

The authors also discussed a possible pelagic adaptation in Teleosauroidea based on the reduced ornamentation in *B. megarhinus*. The ornamentation is weak in almost all longirostrine Crocodylomorphs, in particular in the snout area. Poor or no ornamentation is seen in *S. pictaviensis* (Vignaud, 1998), *S. durobrivensis*, *S. heberti*, S. *larteti*.

Ornamentation of osteoderms with widely separated pits is also observed in *T. cadomensis*. The observation in *B. megarhinus* is based on a unique incomplete osteoderm. Some degrees of

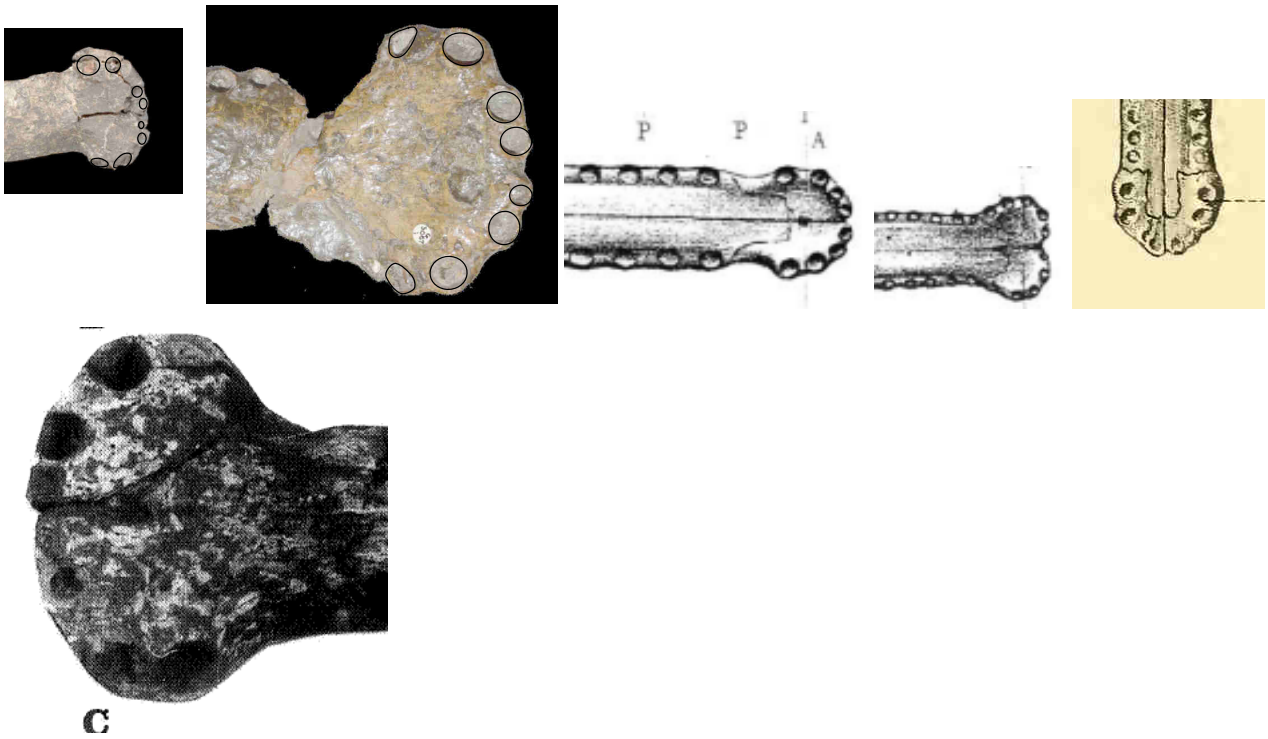
variation exists in the ornamentation of the osteoderms within the same species, and some time within the same individual, and the distance between the pits increases with the age (see Mueller-Töwe, 2006; Vignaud, 1998)(CF. German *S. bollensis*).
I am not sure that the difference in the ornamentation of the snout (maxilla) and osteoderms between teleosauroids indicate more pelagic adaptation in some species of the group, I think the differences are too weak.

-Here are discussed the characters provided in the diagnosis:

Longirostine teleosauroid crocodylomorph with the following unique combination of characters (autapomorphic characters are indicated by an asterisk):
-the premaxillae have five alveoli (shared with *Platysuchus multiscrobiculatus* Berckhemer, 1929, *Teleosaurus cadomensis*).
Also in *S. deslongchampsianus* from Kimmeridgian of France, and *S. priscus* from Germany (See Godefroit et al., 1995).

-the P1 and P2 alveoli do not form a couplet, but are still oriented to the anterior margin of the premaxilla* (***Machimosaurus* has an analogous character, but caused by the reduction in premaxillary tooth count to three, in that genus the P2 and P3 alveoli are oriented to the lateral margin of the premaxilla);**
Clearly P1 and P2 form couplet in *T. megarhinus* (below). The distance between both teeth is weak, and does not differs significantly from that is observed in many teleosauroids (maybe except *T. cadomensis*). In some species the distance is weaker, but the difference does not differs significantly and is not higher than the difference between the Hulk's specimens (left below) and new one, or between the left and right side in new specimen. The main difference is the presence of a diastema between P2-P3, a diastema also observed in *S. durobrivensis*, *S. bollensis, S. megistorhynchus*, but not in *S. larteti* and *T. cadomensis* in which the interalveolar distances seem to have been nearly constant in the premaxilla.

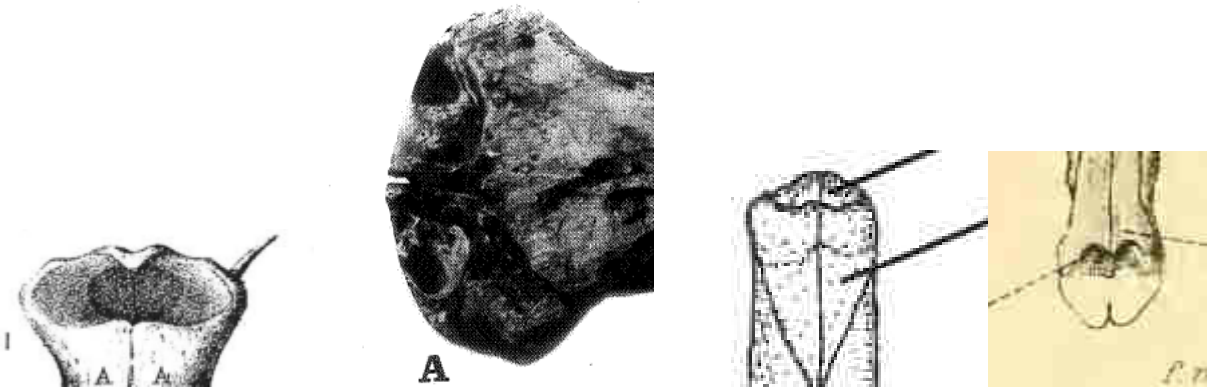
P1-P2 are on the anterior margin of the Pmx and P2-P3 in its lateral margin in *T. cadomensis* (see Eudes-Deslongchamps, 1869) and all *Steneosaurus* species (see Mueller-Töwe, 2005; *S. durobrivensis* in Andrews, 1910, *S. larteti, S. megistorhynchus*). So, I do not see clear difference.



T. megarhinus; *T. megarhinus* *S. Larteti;* *T. Cadomensis; S. durobrivensis* *S. megistorhynchus*

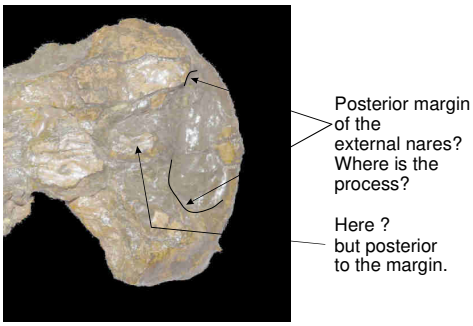
-in dorsal view the external nares has an '8' shaped external nares, created by the enlarged anterior and posterior processes of the premaxilla*;

The anterior premaxillary protuberance is present in all thalattosuchians. The posterior one is not clearly figured in Hulke (and the preservation is probably too poor) nor in Vignaud (1993). A short posterior process is observed at least in *S. gracilirostris*, *S. larteti* (much weaker), Chinese *Steneosaurus* (Young, 1939), *S. megistorhynchus* and *T. cadomensis* (Eudes-Deslongchamps, 1870; Brignon, 2014) and a larger posterior process exists in *S. leedsi* and *M. nasutus* (anterior process not preserved). I think this character could be related to intraspecific variability and preservation.



T. cadomensis *, S. megistorhynchus,* *S. gracilirostris,* *S. leedsi*

Moreover, I do not see the process in the new specimen… an interpretative drawing could help.



-the external nares are anteriorly oriented (shared with *Steneosaurus brevior* Blake, 1876, *Mycterosuchus nasutus* Andrews, 1913, *Platysuchus multiscrobiculatus*, Chinese teleosauroid previously referred to as *Peipehsuchus* (see Li 1993) , Thai teleosauroids PN-16-20 and PRC 239);

Also in *S. megistorhynchus*, probably *T. cadomensis* (see Brignon, 2014), *S. bollensis, S. gracilirostris*…. Depending on specimens. Two problems exist with this character: it is probably related to the orientation of the ventral margin of the premaxilla (and its inclination), and thus of the preservation. Many teleosauroid skulls are dorsoventrally flattened, so the original shape of the Pmx is not preserved and its orientation unknown. Often, when the nare seems to have been dorsally oriented (and the ventral margin of the Pmx horizontal), it is because of the deformation. So numerous biases exist for this character, and unfortunately I don't think it can be used with confidence.

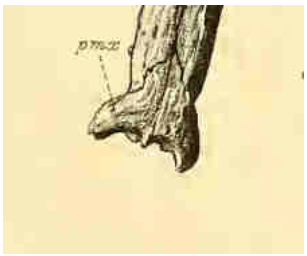
-anterior-posteriorly reduced length of the external nares: more than 67% of the premaxillae total length is posterior to the external nares (shared with '*Steneosaurus' gracilirostris*, Chinese teleosauroid, Thai teleosauroid PN-16-20);

Also in *T. cadomensis, S. megistorhynchus, S. brevior, P. multiscrobiculatus*, and probably *S. larteti*. This character is also related to the orientation of the ventral margin of the premaxillae, and of the preservation and dorso-ventral flattening. So, this character should be considered with extreme caution.

-the lateral expansion of the premaxilla is very pronounced*;

As in *T. cadomensis, S. megistorhynchus, M. nasutus; S. brevior; P. multiscrobiculatus* (see Wesphal, 1962; Muller_Töwe, 2006)*, S. heberti* (Godefroit et al., 1995)…





T. megarhinus; *T. cadomensis; S. megistorhynchus, S. megistorhynchus, S. brevior,* *S. Bollensis;* *M. nasutus*;

-the premaxillae anterior and anterolateral margins are strongly anteroventrally deflected and extend ventrally (shared with *Steneosaurus brevior Mycterosuchus nasutus, Platysuchus multiscrobiculatus* Chinese teleosauroid, Thai teleosauroids PN-16-20 and PRC 239);

This character is also problematic due to deformation. Deflection is often exaggerated, but more often flattened by dorsoventral compression. So, it is difficult to consider this character with confidence. The pmx is also deflected in *S. brevior*, *S. bollensis* (see Westphal, 1962), *T. cadomensis* (Eudes-Deslongchamps in Brignon, 2014)



T. megarhinus; *T. cadomensis* *; T. megistorhynchus*

-inconspicuously ornamented maxilla dorsal surface (shared with Chinese teleosauroid, Thai teleosauroids PN-16-20 and PRC 239, *Aeolodon priscus* von Sömmerring, 1814);
-maxillary ornamentation consisting of a shallow irregular patterns of ridges and rugose anastomosing grooves*;
The snout ornamentation is inconspicuously in nearly all longirostrine Crocodylomorphs, and in particular in teleosauroids.

-maxilla interalveolar spacing is longer than adjacent alveoli;
As in *T. cadomensis*, *S. leedsi*? Also varies according to the position along the maxilla. The spacing is clearly shorter in DORCM G.05067i, and the distance is shorter/nearly equal in the anterior portion of the maxilla in NUMUK PV OR 43086, and slightly longer only in posterior portion. It is

also the case in *S. megistorhynchus, S. gracilirostris, M. nasutus, S. leedsi*, Chinese specimen(Young, 1939) and probably all teleosauroids with the longest snouts.

-lack of apical tooth ornamentation*;
As probably in *S. leedsi, S. durobrivensis* (Andrews,)*, S. pictaviensis* (Vignaud, 1998)

-the ornamental pits on the dorsal osteoderms are circular and regularly organized in alternate rows on the osteoderms (shared with *Aeolodon priscus*).
The ornamentation and the density of pits varies along the shield in teleosauroids (Wesphal, 1962; Mueller-Töwe, 2006). The density of pits is also low in *P. multiscrobiculatus*. Not sure that this character was pertinent, based in a unique fragmentary dorsal osteoderm.

L275: "Overall the external nares constitute a small length of the entire premaxillae that develop posteriorly for more than 67% of its entire length, considerably longer than in *A. priscus* (MNHN.F.CNJ 78), which is approximately 60-65%.": 67% is not considerably longer than 60-65…

L302: Teleosauroids

Phylogenetic analysis: please provide the complete resulted tree at least in the suppl. Data.