

## General Thoughts

Surangular sulcus: I didn't catch this in my previous review (many apologies, 对不起), but the apomorphic sulcus you see on the surangular of *Asiatosuchus* and "*E.* *chunyii*" is not homologous with the sulcus in the character to which you've added it as a new state. Brochu's sulcus is a valley that runs along the lingual surface (picture on left, *Gavialis gangeticus*), with the suture in the nadir. It's present in most tomistomines and gavialoids.

Otherwise, the surangular sits flush against the articular (picture on right, "*E. chunyii*").



Which means the analysis will need to be rerun with the presence/absence of a sulcus on the dorsal surface of the surangular as a completely new character. I don't imagine this would change the topology of their phylogenetic hypothesis much, if at all, but the character isn't publishable as is.

Completeness of narial bar in *P. huiningensis*: While I still disagree with the morphology the authors feel is most likely, as preserved, it *is* ambiguous, and they have sufficiently justified their interpretation in both their response and in the revisions. I ran an analysis using their matrix with only that coding changed and the placement they recover within Alligatoroidea was maintained, so it would have no impact on the topology regardless.

I will note that other Paleogene taxa (e.g., the *Asiatosuchus germanicus* displayed in the Frankfurt museum) also possess both nasal processes and a short 'blip' of a premaxillary process (à la that preserved in the *Protoalligator* type) into the naris, so there is precedent for an incomplete narial bar with a premaxillary process in Crocodylia.

## Line Items

Lines 22, etc...: I don't think PeerJ makes the Oxford comma mandatory to use or not use, but your use of it throughout the paper should be consistent. Currently, it's not used in these lines: 76, 95, 181, 284, 291, 336, 625, 409, 745; and used in these: 22, 315, 328, 351, 878, 882, 890.

Line 51: Should read "at least twenty-four extant species". *Crocodylus suchus* is well-established as distinct from the *Crocodylus niloticus* at this point, and there are recent studies strongly suggesting other species should be split as well (e.g., *Osteolaemus* may be two to three species based on molecular data).

Lines 53–54: "Extant" was dropped when discussing how many species of caiman and alligator are alive. It should probably be included to maintain consistency and accuracy, but might sound repetitive the way the paragraph is currently structured.

Lines 60–61: *Deinosuchus* is also found in Campanian beds. I don't know the specifics of their stratigraphy within that period of time well enough to say which shows up in the fossil record first, but

they do co-occur, so the text should be changed to indicate that *both* of the oldest known alligatoroids occur in the Upper Cretaceous of North America.

Line 72: Also found in brackish environments where individuals have quick, easy access to freshwater (observed in *A. mississippiensis*, *C. crocodilus*, and *C. latirostris*).

Line 582: There should be a title before this since a new species is being discussed (e.g., <https://peerj.com/articles/658.pdf>).

Line 584–585: *Eoalligator* should be listed in a synonym section after the line stating the new name instead of before it.

Line 595: Phrasing in diagnosis is sometimes telegraphic and sometimes narrative. Should consistently be one or the other.

Line 596: "...and from ~~the~~ almost all"

Line 660: The morphology isn't extreme enough warrant saying it's an adaptation for durophagy (certainly nothing like is seen in most alligatorines). That would imply a more substantial and specialized difference from typical "pointy" conical crocodylian teeth than is present. The posterior dentary teeth are certainly conical and it's not clear if the posterior maxillary teeth are similar to those of *Alligator mississippiensis* or if their apex is encased further inside the rock.

Line 750: No bootstrapping?

Line 754: "*C.*" *pigotti* has been renamed *Brochuchus pigotti* (<http://www.tandfonline.com/doi/abs/10.1080/02724634.2013.743404>)

Line 757: Early members of this clade are not different enough from basal alligatorines and early members of the clade containing *Procaimanoidea* and *Allognathosuchus* (not recovered in this study, but consistently recovered in others that have more resolution in this part of the tree) that I would feel comfortable calling that entire lineage "advanced" (seems a bit of modern bias creeping in there).

Lines 852, 858, 861, 862: Inconsistent use or lack thereof of quotation marks around "*Eoalligator chunyii*" and "*Eoalligator*".

Lines 910, 934, 948, 959: Change hyphens to en dashes when discussing continua of time or space.

Line 927: Late/Upper Pleistocene is an official division, so it should be capitalized.

Line 965: "Eoalligator chunyii"...