Twitter Thread by Christian Kammerer

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@Synapsida

2020 is finally at an end, so it looks like it's time once again to review the year in non-mammalian synapsid research!

You can tell 2020 was the worst because I didn't describe a single new synapsid species this year. In part, that's due to spending most of my energy on larger-scale synthetic projects, but I had a few new taxa that were supposed to come out and got delayed by #2020 stuff...

Thankfully my colleagues in the synapsid research community have not been so idle, naming 13 new species this year. The vast majority (9) were cynodonts, there were also 2 pelycosaurs, 1 dicynodont, and 1 therocephalian.

For new pelycosaurs the highlight was definitely the long-awaited description by Berman et al. of Martensius, the Bromacker caseid, a plesiomorphic early member of the group known from beautiful material: https://t.co/GUJRKvtNwc

No new biarmosuchians or dinocephalians (though watch out next year…), but there was one new dicynodont: a basal dicynodontoid, Taoheodon, part of an increasingly diverse upper Permian fauna from China: https://t.co/lpq2ElPADw

The new therocephalian, Caodeyao, is also from the late Permian of China, and is an unusual short-skulled form perhaps related to the enigmatic Russian Purlovia: https://t.co/DCc8lOUvqF

2020 was a very good year for African cynodont discoveries outside the Main Karoo Basin, with new taxa known from complete crania described from Namibia (Chiniquodon omaruruensis & Etjoia dentitransitus) and Zambia (Nshimbodon muchingaensis): https://t.co/7PjJFFLhBe

Other interesting new cynodonts were described from Brazil, India, and Poland, but the most surprising had to be the discovery of a cynodont (Kataigidodon) in the Chinle Fm. of Arizona, USA, an area where cynodont presence was long thought legendary: https://t.co/EsCNYFrdQQ

Moving beyond single specimens, the incredibly rich fossil record of Permo-Triassic synapsids has increasingly been leveraged for destructive sampling. Whitney & Sidor provided the first evidence for torpor in Antarctic Lystrosaurus based on tusk sections: https://t.co/1kmQDPf5Y3

Whitney et al. also demonstrated that gorgonopsians beat dinosaurs by tens of millions of years in originating one of the most specialized types of blade-like (ziphodont) teeth: https://t.co/zrDn19b9OI

Stable isotope analysis of dicynodont teeth by Rey et al. provided evidence for reliance on aquatic environments in the ecologically-enigmatic Endothiodon, with implications for its unusual distribution pattern: https://t.co/mXMPOKWpel

Macungo et al. also studied Endothiodon, describing extensive new material from what is proving to be an extremely interesting novel set of localities in Mozambique: https://t.co/HGYaKtHM2q

Jones et al. examined axial regionalization along the mammalian stem, the latest major output of from an extensive multi-year investigation into synapsid vertebral evolution: https://t.co/kE4K4qJyrn

Kümmel et al. reviewed synapsid wrist structure in exhaustive detail, rewriting the origin of the mammalian lunate bone: https://t.co/U1UqrGvl2k

With imaging labs largely shut down due to the pandemic, there was a distinct dip in CT-assisted detailed anatomical descriptions this year, but Pusch et al. did provide new info on the large predatory therocephalian Lycosuchus: https://t.co/5QH6ON3KCU

And Kerber et al. provided endocranial data from a new specimen of the extremely mammal-like Late Triassic Brazilian cynodont Prozostrodon: https://t.co/ntNtqfp26T

(There was also some biogeographic stuff published which we won't discuss further and should probably be promptly forgotten.)

All in all, though, lots of solid, well-researched stuff, and particularly great to see so many papers coming from early-career researchers (indications that the future of synapsid research is bright…at least if we live in a society where these folks can get jobs…)

Hoping for tons more amazing discoveries in 2021, and to actually be able to hold a synapsid fossil in my hand once more! Lots of field/lab/collections time lost this past year, and though that's all minor compared to human life, it sure would be nice to dig up some bones again…

Who knows, maybe I can make it back to the Karoo before next year is up, and get some good use out of the recent total overhaul of Permo-Triassic stratigraphy there (https://t.co/9eqbnkoaoR). Here's hoping!