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SUPPLEMENTARY ONLINE MATERIAL FOR

A new eutherian mammal from the Upper Cretaceous Bayanshiree Formation, Mongolia

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Published in *Acta Palaeontologica Polonica* 2025 70 (1): 193-203.
https://doi.org/10.4202/app.01213.2024

Supplementary Online Material

SOM 1. Data matrix available at
http://app.pan.pl/SOM/app70-Okoshi_etal_SOM/SOM_1.nex

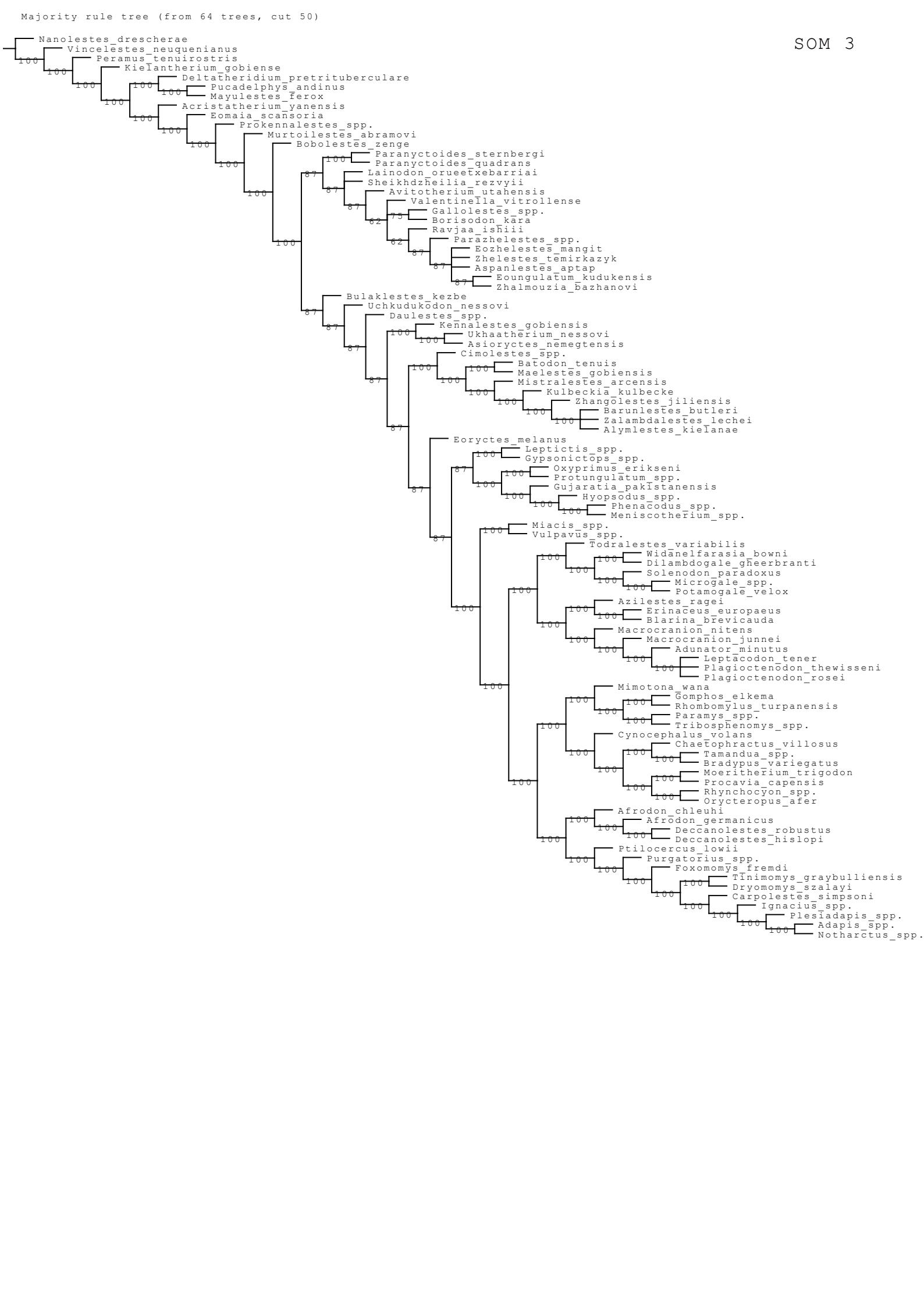
SOM 2. Strict consensus of 64 trees

SOM 3. Majority rule tree

SOM 4. The stratigraphic and age data

SOM 2

Strict consensus of 64 trees (0 taxa excluded)


Majority rule tree (from 64 trees, cut 50)
Nanolestes_drescherae
Vincelestes_neuquenianus
Peramus_tenuirostris
Kielantherium_gobiense
Deltatheridium_pretrituberculare
Pucadelphys_andinus
Mayulestes_ferox
Acristatherium_yanensis
Eomaia_scansoria
Prokennalestes_spp.
Murtoilestes_abramovi
Bobolestes_zenge
Paranyctoides_sternbergi
Paranyctoides_quadrans
Lainodon_orueetxebarriai
Sheikhdzheilia_rezvyii
Avitotherium_utahensis
Valentinella_vitrollense
Gallolestes_spp.
Borisodon_kara
Ravjaa_ishiii
Parazhelestes_spp.
Eozhelestes_mangit
Zhelestes_temirkazyk
Aspanlestes_aptap
Eoungulatum_kudukensis
Zhalmouzia_bazhanovi
Bulaklestes_kezbe
Uchkudukodon_nessovi
Daulestes_spp.
Kennalestes_gobiensis
Ukhaatherium_nessovi
Asioryctes_nemegtensis
Cimolestes_spp.
Batodon_tenuis
Maelestes_gobiensis
Mistralestes_arcensis
Kulbeckia_kulbecke
Zhangolestes_jiliensis
Barunlestes_butleri
Zalambdalestes_lechei
Alymlestes_kielanae
Eoryctes_melanus
Leptictis_spp.
Gypsonictops_spp.
Oxyprimus_erikseni
Protungulatum_spp.
Gujaratia_pakistanensis
Hyopsodus_spp.
Phenacodus_spp.
Meniscotherium_spp.
Miacis_spp.
Vulpavus_spp.
Todralestes_variabilis
Widanelfarasia_bowni
Dilambdogale_gheerbranti
Solenodon_paradoxus
Microgale_spp.
Potamogale_velox
Azilestes_ragei
Erinaceus_europaeus
Blarina_brevicauda
Macrocranion_nitens
Macrocranion_junnei
Adunator_minutus
Leptacodon_tener
Plagioctenodon_thewisseni
Plagioctenodon_rosei
Mimotona_wana
Gomphos_elkema
Rhombomylus_turpanensis
Paramys_spp.
Tribosphenomys_spp.
Cynocephalus_volans
Chaetophractus_villosus
Tamandua_spp.
Bradypus_variegatus
Moeritherium_trigodon
Procavia_capensis
Rhynchocyon_spp.
Orycteropus_afer
Afrodon_chleuhi
Afrodon_germanicus
Deccanolestes_robustus
Deccanolestes_hislopi
Ptilocercus_lowii
Purgatorius_spp.
Foxomomys_fremdi
Tlnimomys_graybulliensis
Dryomomys_szalayi
Carpolestes_simpsoni
Ignacius_spp.
Plesiadapis_spp.
Adapis_spp.
Notharctus_spp.

The stratigraphic and age data of Fig. 5

The fossil stratigraphic range within the Zhelestidae + *Paranyctoides* clade, as visualized in this study, is based on stratigraphic data from 15 species. These ranges are derived from a combination of sources that report either absolute ages, relative geological time intervals, or both. Unless otherwise specified, numerical ages corresponding to geological intervals are assigned based on the Geologic Time Scale (Gradstein et al. 2012). Specific ranges and corresponding references for each species are as follows: *Paranyctoides sternbergi* is reported from the Irvine locality, Alberta (Fox 1979), which was initially thought to be part of the Oldman Formation, although subsequent stratigraphic revisions have demonstrated that these deposits are within the Dinosaur Park Formation, and the extent of deposition of this layer was interpreted as 76.738 Ma to 74.33 Ma based on radiometric dates (Ramezani et al. 2022); *Paranyctoides quadrans*, *Eoungulatum kudukensis*, *Zhelestes temirkazyk*, and *Aspanlestes aptap* are reported to range from the Bissekty Formation (*Paranyctoides quadrans*, Averianov and Archibald 2016; *Eoungulatum kudukensis*, *Zhelestes temirkazyk*, and *Aspanlestes aptap*, Archibald and Averianov 2012), with the depositional range interpreted as 93.35 Ma to 89.4 Ma, the lower limit inferred to correspond to the *Mammites nodosoides* Zone (Dochev 2015, Lehmann 2015) based on

the presence of *Mytiloides labiatus* (Redman and Leighton 2009), and the upper limit is constrained by the overlying the Aitym Formation, which is estimated to range from late Turonian to Coniacian; *Parazhelestes* spp. are reported from the Bissekty formation and Aitym Formation (Archibald and Averianov 2012); *Zhalmouzia bazhanovi* is reported from the Bostobe Formation (Averianov et al. 2014) which was described as Santonian to Campanian (Kordikova et al. 2001); *Ravjaa ishiii* is reported to range from 101.9 Ma to 85.6 Ma based on U-Pb dating (Kurumada et al. 2020), with further details available in the Material and Methods section; *Gallolestes* spp. are reported from the El Gallo Formation (*Gallolestes Pachymandibularis*, Lillegraven 1976) and the Aguja Formation (*Gallolestes agujaensis*, Cifelli 1994) with the depositional range interpreted as 88.6 Ma to 70.2 Ma, combining the maximum depositional ages reported for both formations (Kane et al. 2022 for the El Gallo Formation, and Fowler 2017 for the Aguja Formation); *Borisodon kara* is reported from the grey siltstone near Ashchikol' Lake, Kazakhstan, of lower Turonian age (Archibald and Averianov 2012); *Valentinella vitrollense* is reported from the Maastrichtian deposits of the Arc Basin, France (Tabuce et al. 2004), later confirmed to be late Maastrichtian (Tabuce et al. 2013); *Avitotherium utahensis* is reported from the Kaiparowits Formation (Cifelli 1990), with the depositional range interpreted as 78.01 Ma to 72.8 Ma based on U-Pb dating (Beveridge

et al. 2020; Ramezani et al. 2022); *Lainodon orueetxebarriai* is reported from the unnamed stratigraphical unit, Laño, Spain, Late Cretaceous (late Campanian or early Maastrichtian) by Gheerbrant and Astibia (1994); *Eozhelestes mangit* and *Sheikhdzheilia rezvyii* are reported from the upper Khodzhakul Formation, early Cenomanian (Averianov and Archibald 2005). The ranges provided are interpreted as representing the maximum depositional range, incorporating the largest errors reported in cited sources wherever feasible.

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