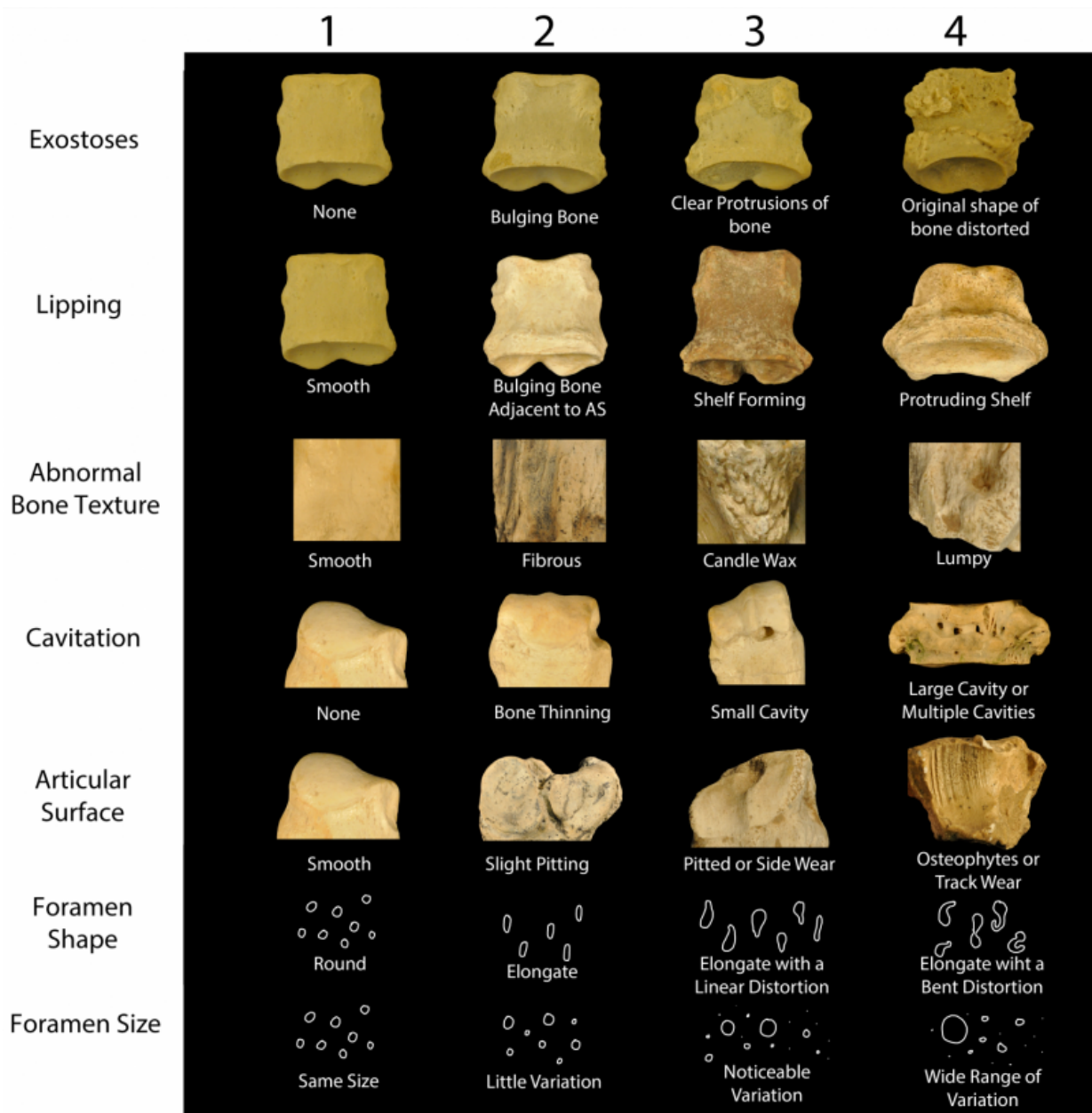


Significant changes in rhino bone health over 50 million years

February 3 2016



Examples of each pathology category and the 1-4 rating system are given along with a short description. Credit: Stilson et al.

While rhino species evolved and increased in size over 50 million years, their bones may have strained to support their massive and active bodies, according to a study published February 3, 2016 in the open-access journal *PLOS ONE* by Kelsey Stilson from the University of Chicago and colleagues from the University of Oregon.

The signs of bone health issues, like [bone degeneration](#), inflammation, and infection have been observed in the bones of many extinct North American and living African and Asian rhino species. Scientists are interested in exploring the relationship between animal size, bone health, and bone function in an evolutionary context. The authors of this study evaluated seven physical indicators of bone health, rhino mass, and [bone structure](#) in six extinct and one living rhinoceros species from 50 million years ago to the present. For context, non-avian dinosaurs went extinct around 65 million years ago.

The authors found the incidence of osteopathology increased from 28% to 65-80% as new species evolved. The only living [species](#) in this study, the black rhino, displayed 50% fewer osteopathologies than the more derived extinct taxa. The researchers also found that with increasing body mass, indicators of disease in the bones also significantly increased. The authors suggest these results may reflect a part of the complex system of adaptations in rhinos over millions of years, where increased mass, running, and/or increased life span are selected for, to the detriment of long-term [bone health](#). The authors say this work has important implications for the future health of hoofed animals and possibly even humans.

More information: Stilson KT, Hopkins SSB, Davis EB (2016) Osteopathology in Rhinocerotidae from 50 Million Years to the Present. *PLoS ONE* 11(2): e0146221. [DOI: 10.1371/journal.pone.0146221](https://doi.org/10.1371/journal.pone.0146221)

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