

# Osteological criteria for the specific identification of Monitor lizards (*Varanus* Merrem, 1820) remains in subfossil deposits of Sundaland and continental Southeast Asia

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**Abstract.** The identification at species level of subfossil remains of lizards from tropical regions currently suffers from strong limitation linked to the lack of comprehensive work conducted on the osteology of modern taxa. The aim of this study is to provide osteological criteria allowing for the specific identification of the subfossil remains of Sundaland and continental Southeast Asian monitor lizards (*Varanus* sp.), which are often well-represented in the deposits of this geographic area. To do so we performed an osteological study of the four species occurring in this region (*V. bengalensis* sensu lato, *V. salvator*, *V. dumerilii*, and *V. rudicollis*) using a large set of 88 skeletons of modern specimens. The observation of the full set of specimens allows us to define 41 osteological criteria distributed on 20 different anatomical parts which enable the specific identification of isolated bones of the studied species. The results highlight the importance of taking account of the morphological intraspecific variability by the use of large samples of specimens to avoid identification errors. They also show that the distinction of closely related taxa remains complex even when detailed morphological analyses are performed.

**Keywords:** morphology, osteology, paleontology, squamate, zooarchaeology.

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## **Supplementary material**

**Supplementary table S1.** List of museum specimens used in the study along with their attached data.

Abbreviations: SVL: Snout-Vent Length; TL: total length.

**Supplementary table S2.** Details of all the characters states observed on each specimen of the modern comparative sample of *Varanus*.

**Supplementary material S3.** Osteological criteria not retained as reliable for the identification of *Varanus* species.