ACHIEVEMENTS

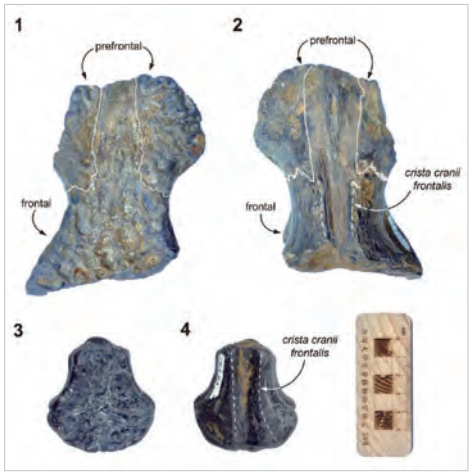
Introducing Taiwan's Largest Reptile Fossil— 'The Crocodile Princess'

Associate Prof. Cheng-Hsiu Tsai of the Department of the Life Science and his graduate student Yi-Yang Cho of the Institute of Ecology and Evolutionary Biology at National Taiwan University made a significant discovery after four years of meticulous research. They identified Taiwan's largest known reptile fossil,*Toyotamaphimeia taiwanicus*, an extinct endemic crocodilian lineage in Taiwan. Their discovery, which sheds light on an important facet of Taiwan's natural history, has been published in the *Journal of Paleontology*, a publication of the Paleontological Society.

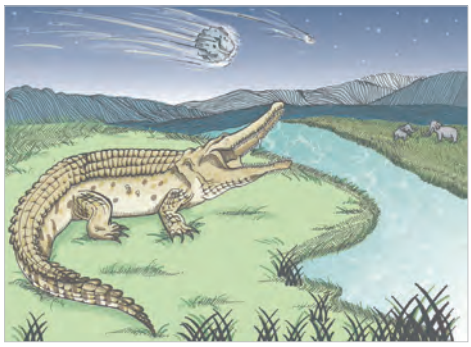
While crocodiles are seldom a focal point in Taiwan's biodiversity studies, and it was in 1972, a half century ago, that the first endemic crocodile species in Taiwan, Tomistoma taiwanicus, was christened. This extinct species, which thrived during the Pleistocene period, was discovered by Japanese paleontologist Tokio Shikama. Since the crocodile fossil specimen has been held by the National Museum of Nature and Science in Japan, the existence and significance of the Taiwan Crocodile received limited attention in Taiwan.

To delve deeper into this subject, Prof. Tsai retrieved the type specimen of *Tomistoma taiwanicus* from the National Museum of Nature and Science in Japan to conduct further research. Their examination of the type specimen revealed that the so-called *Tomistoma taiwanicus* was not a member of the *Tomistoma* genus but rather an extinct genus known as "*Toyotamaphimeia*." Interestingly, the name *Toyotamaphimeia* derives from a princess in Japanese mythology who transformed into a crocodile, reflecting that Taiwan is now home to its own "Crocodile Princess." Prof. Tsai's detailed analysis disclosed significant morphological differences between this type specimen and the only known specimen from Osaka, Japan. Consequently, the name was revised to "*Toyotamaphimeia taiwanicus*."

Through further analysis and size estimation, Prof. Tsai determined that *Toyotamaphimeia taiwanicus* could grow to 7 meters in length, making it larger than the largest known living saltwater crocodile in the world today. These findings align with Prof. Tsai's earlier research findings, which were published in *Science* earlier this year, addressing large-scale extinctions of organisms in Taiwan. The forthcoming results of his paleontological research are expected to provide valuable insights into the mystery and causes of biological extinctions in Taiwan, offering a long-term perspective for addressing climate change and the ongoing sixth mass extinction crisis.



The morphological characteristics of the type specimen of *Toyotamaphimeia taiwanicus* and some cranial features.



Reconstruction image of *Toyotamaphimeia taiwanicus* (illustrated by Mobeichi).

Click or Scan the QR code to read the journal article in *Journal of Paleontology*.