

New Pleistocene bird fossils in Taiwan reveal unexpected seabirds in East Asia


Siao-Man Wu, Trevor H. Worthy, Chih-Kai Chuang and Chien-Hsiang Lin
Acta Palaeontologica Polonica 68 (4), 2023: 613-624 doi:10.4202/app.01091.2023

The island of Taiwan, with its diverse microclimates and key position on the East Asian-Australasian Flyway, attracts numerous bird enthusiasts due to its diverse avian fauna. Nevertheless, due to the scarcity of fossil records, there is a significant knowledge gap between modern and ancient avifaunas in Taiwan. Currently, there is only a single described Pleistocene fossil; it is attributed to Phasianidae. To address this gap, this study describes two new bird fossils, a left humerus and a left tibiotarsus, and discusses them in detail herein. The fossils were collected from the Liuchungchi Formation (Early Pleistocene, 1.95–1.35 Ma) in Niubu, Chiayi, southwestern Taiwan, which represents a neritic environment. The fossils are identified as from species of Gaviidae (loons), with the humerus belonging to an undetermined species of *Gavia* and the tibiotarsus to *Gavia stellata*. Loons are seabirds that are primarily distributed in high- and middle latitudes of the Northern Hemisphere. In addition, these birds are extremely rare in modern Taiwan: records are scarce and most are limited to northern and northeastern Taiwan since the 1860s, indicating that the modern *Gavia* birds only occasionally visit Taiwan. All known Pleistocene fossils of species of *Gavia* from the northern West Pacific come from Japan. The Taiwan fossils of *Gavia* provide valuable bird evolutionary and paleobiogeographic information for the subtropical West Pacific and may imply the presence of a distinct avifauna in the region during the Early Pleistocene.

Key words: Aves, *Gavia*, loon, seabird, Early Pleistocene, Taiwan.

Siao-Man Wu [smallmmmm@gmail.com; ORCID: <https://orcid.org/0009-0004-3702-1996>],
Chih-Kai Chuang [ntnupast@gmail.com; ORCID: <https://orcid.org/0009-0001-1289-9442>]
] and Chien-Hsiang Lin [chlin.otolith@gmail.com; ORCID: <https://orcid.org/0000-0002-9843-9729>]
] (corresponding author), Biodiversity Research Center, Academia Sinica, Taipei, 11529, Taiwan. Trevor H. Worthy [trevor.worthy@flinders.edu.au;
ORCID: <https://orcid.org/0000-0001-7047-4680>], Palaeontology Group, College of Science and Engineering, Flinders University, Adelaide, 5001, Australia.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(1,399.7 kB\)](#) |

 [Supplementary file \(162.6 kB\)](#)