

New material of *Cayaoa bruneti* TONNI, an Early Miocene anseriform (Aves) from Patagonia, Argentina

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With 7 figures and 1 table

NORIEGA, J. I., TAMBUSI, C. P. & COZZUOL, M. A. (2008): New material of *Cayaoa bruneti* TONNI, an Early Miocene anseriform (Aves) from Patagonia, Argentina. – N. Jb. Geol. Paläont. Abh., **249**: 271–280; Stuttgart.

Abstract: *Cayaoa bruneti* TONNI, 1979 is an early Neogene anseriform exhumed from marine sediments of the lower levels of the Gaiman Formation (“Patagoniano”, Leonian Marine Stage, Chubut, Argentina). It was originally based on a partial tarsometatarsus that was not assigned to subfamily or tribe. We re-examine the holotype and study new tarsometatarsi, and previously undescribed skeletal elements including partial femora, tibiotarsi, partial humeri and carpometacarpi. *Cayaoa bruneti* was a strictly foot-propelled diving bird that exhibited an extreme reduction of the fore-limb, being probably the earliest recorded flightless duck. Similarly reduced wings are found in the distantly related anseriform *Cnemiornis* OWEN, 1866 of subrecent deposits of New Zealand, *Chendytes* MILLER, 1925 of the Pleistocene of California, and the moa-nalos of the Late Quaternary of Hawaii.

Key words: Anatidae, *Cayaoa bruneti*, flightlessness, Miocene, South America.

1. Introduction

Cayaoa bruneti TONNI, 1979 is an early Neogene duck from Patagonia, originally described from a partial tarsometatarsus. The holotype and all the material previously and here referred to the species, comes from the marine sediments of the lower levels of the Gaiman Formation (Marine Leonian Stage, “Patagoniano”) at Chubut Province, Argentina. *Cayaoa bruneti* is the second most numerous component of the avifauna at these levels and locality whereas the penguins (Sphenisciformes) represent the first in abundance (TONNI 1980; ACOSTA HOSPITALECHE 2005; ACOSTA HOSPITALECHE et al. 2007). TONNI (1979) assigned *C. bruneti* to the Anatidae

(Anseriformes) and suggested its close phylogenetic affinities with the species of *Tachyeres* OWEN, 1875, the steamer-ducks of southern South America. However, this hypothesis of relationship was never checked by cladistic methods.

Our contribution includes valuable new data on this poorly known species of Tertiary diving duck, with descriptions and figures of previously unreported skeletal bones.

2. Geographic and stratigraphic location

All the material assigned to *C. bruneti* was recovered from the southern margin of the Chubut River, between Gaiman and Rawson cities, Chubut Province,