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Pehuen Co: Updated taxonomic review of a late Pleistocene ichnological site in Argentina

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ABSTRACT

The paleoichnological site of Pehuen Co, located on the southern coast of Buenos Aires province, Argentina, was discovered in 1986 and the first paper was published in 1987. New discoveries made in the following years have revealed well-preserved Pleistocene mammal and bird footprints of high diversity. Investigations at this site have continued to the present. The most important aim of this paper is to revise the previous ichnotaxonomic assignations, and to present some new discoveries. The described tracks include eleven mammal (*Neomegatherichnum pehuencoensis*, *Mylodontidichnum rosalensis*, *Glyptodontichnus pehuencoensis* nov. igen. and isp., *Eumacrauchenichnus patachonicus*, *Proboscipeda australis* nov. comb., *Dolichotichnus marae* nov. igen. and isp., *Ursichnus sudamericanus* nov. isp., *Hippipeda* isp., *Lamaichnum guanicoe*, *Lamaichnum tulipensis* nov.comb, *Pecoripeda commune* nov. comb.) and four bird icnotaxa (*Phoenicopterichnum pehuencoensis*, *Charadriipeda* isp., *Gruipeda* isp., and *Aramayoichnus rheae* nov. igen. and isp.). The second goal of this paper is to emphasize the world-wide significance of the Pehuen Co site relative to other Pleistocene vertebrate tracksites. Pehuen Co site is unique because of the quality of preservation, and the abundance and diversity of the footprints.

1. Introduction

The discovery of Pehuen Co paleoichnological site, located on the south coast of Buenos Aires province, Argentina (Fig. 1), occurred in October 1986. The high quality, abundance and diversity of mammal and bird footprints were soon noticed; they merited a first communication during the IV Congreso Latinoamericano de Paleontología, held at Santa Cruz de la Sierra, Bolivia, on July 1987 (Aramayo and Manera de Bianco, 1987a,b). Pehuen Co is a coastal site and is continuously subject to erosion by waves during high tides and storms. These factors, along with harmful human activities, continuously exposed new tracked surfaces and destroyed or covered many others with sand. For this reason, the visits to the site to document and rescue important ichnological material have continued for almost 30 years (Aramayo and Manera de Bianco, 1990, 1994, 1996, 1998; Aramayo, 2001; Aramayo et al., 2003; Manera de Bianco and Aramayo, 2004; Manera de Bianco et al., 2005a, 2010; Manera and Aramayo, 2013).

Conservation of the ichnological record of the site was greatly aided by the Rolex Award for Enterprise, which was given in 2004 to one of us (T. M. de B.). The prize allowed us to make silicon rubber casts of the main ichnotaxa; these are today deposited at the Carlos Darwin Museum, in Punta Alta city, Buenos Aires province, Argentina. The repository collection includes original footprints and casts of trackways. Most of the trackways depicted in Aramayo and Manera de Bianco (1987a,b), including the holotypes, remained in situ and some of them disappeared due to sea erosion. In 2005 the area was designated a reserve area (Reserva Geológica, Paleontológica y Arqueológica Provincial Pehuen Co — Monte Hermoso), and is now protected by provincial law nr. 13394.

The main purpose of the present paper is to provide an updated ichnotaxonomic descriptions and diagnoses, including new footprint discoveries made in the recent years. We also discuss Pehuen Co's world significance, emphasizing its uniqueness among Pleistocene vertebrate tracksites, the quality of preservation, abundance and diversity of fossil footprints.

2. Geological setting

The paleoichnological site is located about 1.5 km east of Pehuen Co village, on the southern coast of Buenos Aires province, Argentina (extending from 39° 00′ 13″ S, 61° 32′ 30″ W to 38° 59′23″ S, 61° 27′ 30″ W) (Fig. 1). Footprint-bearing beds are siltstone, sandstone and claystone, forming modern abrasion platforms outcropping along the beach for at least 10 km; the surface of the whole area is about 1.5 km^2. The exposed sedimentary section is 1.20 m thick (Fig. 2) and is formed by fine-grained sediments deposited in

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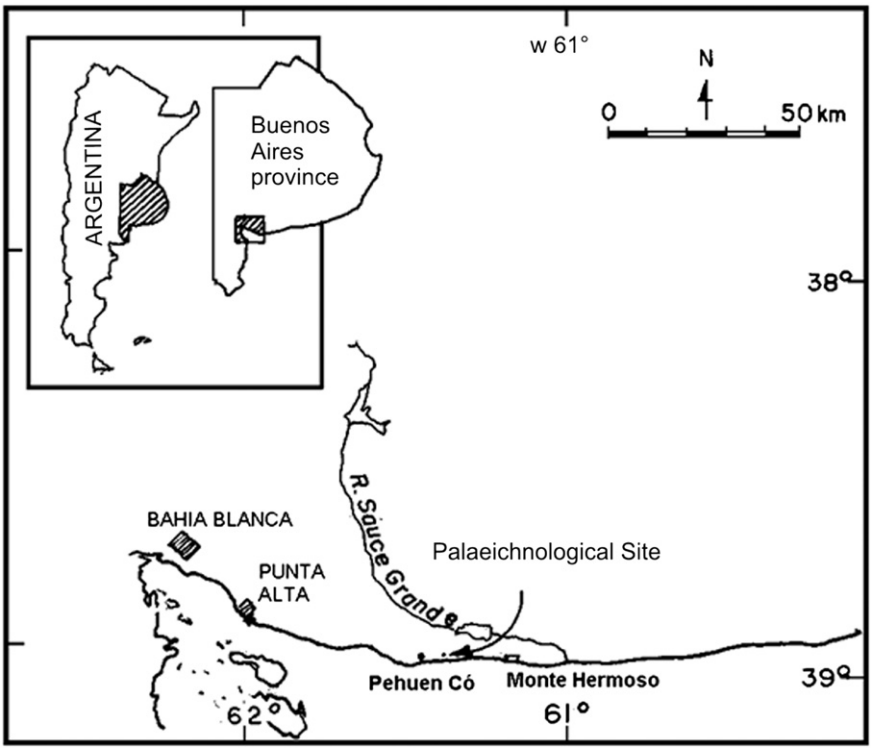

Fig. 1. Map of part of the Buenos Aires province showing the location of the Pehuen Co site.

temporary shallow ponds after flooding events of fluvial origin (Zavala and Quattrocchio, 2001). This outcrop is found in the inter- and supratidal zones of the beach, and is reached and eroded by high tides. Because of this location, the outcrop is covered and uncovered with sand in a random way, which sometimes makes observation of the footprints difficult. The age of this site according to AMS (Accelerator Mass Spectrometry) radiocarbon dating is 12,000 y B.P. ± 100 (New Zealand Rafter Lab) (Aramayo and Manera de Bianco, 1996).

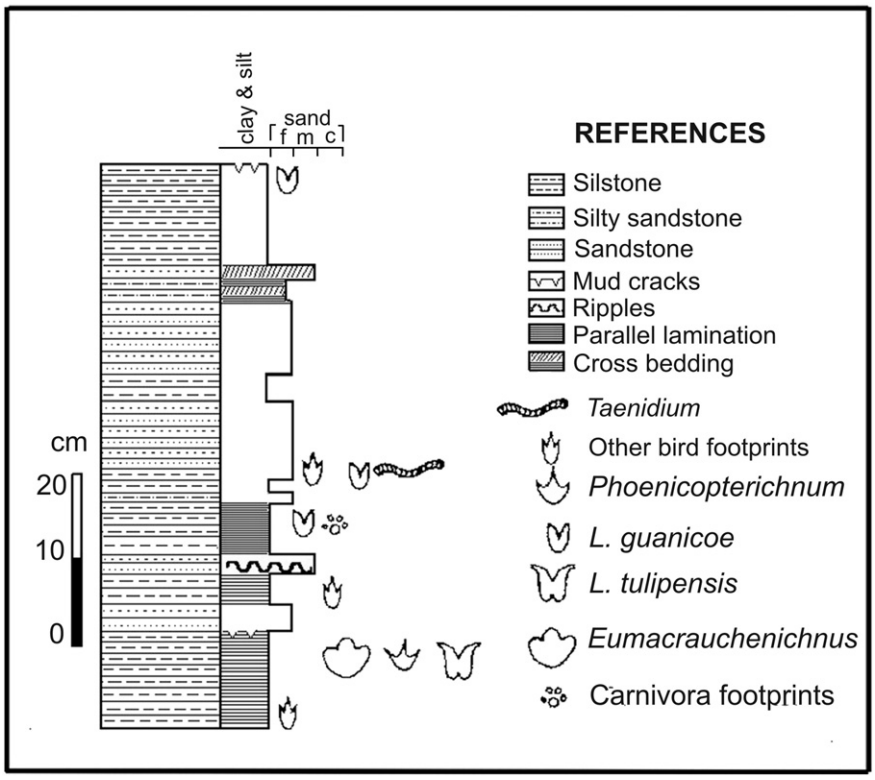

Fig. 2. Sedimentary log of the middle part of the section.
Taken from Manera and Aramayo (2013).