



The skeletons of Lauricocha: New data on old bones



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ABSTRACT

The caves near Lake Lauricocha, Peru, were excavated between the late 1950s and mid-1960s and have since influenced the interpretation of early man in South America. Prior to the publication of this paper, the data used to interpret the age of this material was not based upon the human skeletons themselves, but were rather produced from the accompanying material, such as sediment, plant remains and animal bone. Radiocarbon dating in the 1960s was often not applied to human bones, as pre-treatment methods at that time were not as refined as at present and with conventional techniques, quite a lot of material had to be used. The development of AMS techniques requires much less material for analysis and sample preparation through collagen extraction means that radiocarbon dating of human bones is now possible and is a reliable method. As part of a wider project to analyse the DNA of the Lauricocha skeletons in order to elucidate migration patterns in Peru, we sampled 4 of the 11 skeletons for radiocarbon dating. This paper reports the results of this dating analysis.

The results indicate that the skeletons are younger than interpreted from previously determined radiocarbon data on different material. However, this does not mean that the older analyses are wrong, and we review our findings in the light of this previous work to produce a new chronology for the site.

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1. Introduction

The caves of Lauricocha were discovered along the eastern side of Lake Lauricocha (3850 m a.s.l.), with cave L-2 at a height of more than 4000 m above sea level. Lake Lauricocha is located in the Central Andes of Peru, 25 km east of one of the highest mountains in South America, Cerro Yerupajá (6634 m) in the Cordillera Huayhuash, and 190 km north–north-east of Lima (see Fig. 1). The Andes can be described as topographically rugged, which greatly influences temperature and atmospheric pressure, both diminishing with altitude. However, at altitude, significant areas of land suitable for settlement and agriculture can be found. The area of Lauricocha is part of an environmental zone called Puna, which is described as a high, cold region (3900–4600 m) where grassy steppe vegetation predominates. The fundamental element for allowing settlement is the availability of water. Rainfall in the higher Andes is heavier in the summer months, favouring crop growth. However, precipitation may also be scarce as it varies according to topography (location) and according to climate cycles. In general, water availability increases with altitude as evaporation decreases, which allows cultivation with less irrigation than in lower parts of the region (Cardich, 1987).

In prehistory, during some time the climate must have been warmer than today as traces of agriculture can be found at altitudes up to

4400 m. Whereas today tongues of glacial ice descend to 4700 m, at the end of the Pleistocene, when Lauricocha cave L-2 shows the first signs of human visitation, icesheets covered the Lauricocha region (Cardich, 1985).

Augusto Cardich excavated the caves of Lauricocha/Peru between around 1958 and 1967. During the first excavation in 1958, 11 skeletons were found in different layers in cave L-2 (see Figs. 2, 3 and 5). During a later excavation in 1967 in the rear part of the cave the site stratigraphy was investigated in more detail. The different sediment layers, showing a sequence similar to that published by Cardich (1964), were renamed (numbers 1–32) and some sediment samples taken for radiocarbon dating. Unfortunately the stratigraphy of both excavations does not seem completely consistent and hence it is quite challenging to correlate the radiocarbon ages of the sediment samples taken during the later (1967) excavation to the contexts in which the 11 skeletons were found, 4 of which are the focus of radiocarbon dating described in this paper. We have tried to put our data into a robust context using the information provided by Cardich (1964) and the information on the radiocarbon sampling and dating undertaken during the 1967 excavation. However, a key problem of the 1967 stratigraphic analysis is that whilst the sediment units were relabelled and described, no indication was provided as to which layer (1–32, from top to bottom) corresponds to which depth (Teruggi et al., 1970) or how the layers correspond to the labelling of the first excavation in 1958 (Labels A–S, from top to bottom). However, we found some information on depth of the sediment samples used for radiocarbon dating in Ziolkowski et al. (1994).

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Fig. 1. Location of Lauricocha in Peru. Modified from d-map, free download.

To correlate the data it is necessary to consider the material used for dating. The first dates were determined at Teledyne labs/USA (laboratory code "I-"). Here the material used is not clear (burnt bone and charcoal, or only burnt bone, or only charcoal). The data corresponding to the second

excavation in 1967, charcoal (humic acid, residue) and sediment, was measured in Groningen/Netherlands (laboratory code GrN-) with the conventional counting technique. The new data, on human bones, was determined at Mannheim/Germany (MAMS-) using AMS, cf. Table 3.

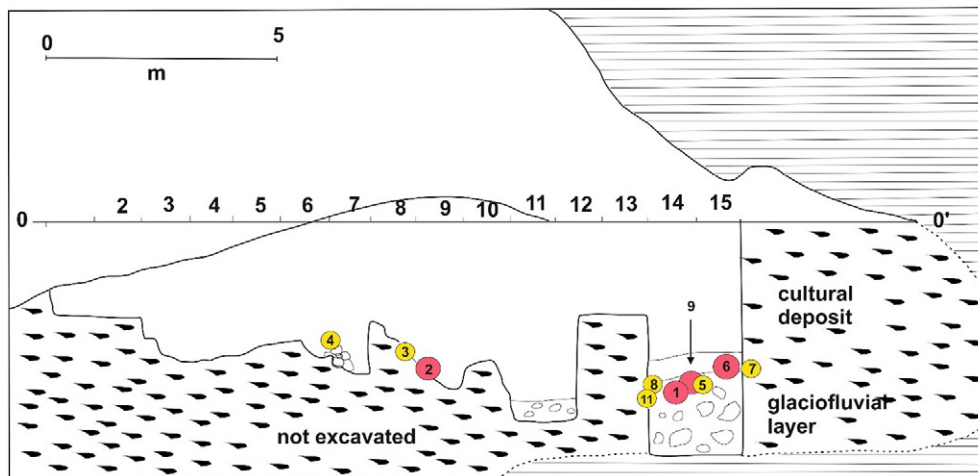


Fig. 2. Positions of the 11 skeletons found in cave L-2 at Lauricocha. Red symbols mark the bones used during this analysis, yellow symbols mark the unsampled skeletons. Figure drawn after (Cardich, 1964).

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