



## Diet in Peru's pre-Hispanic central coast



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### ABSTRACT

The Tablada de Lurín cemetery (200 BC–AD 200; Lima, Peru) is characterised by two mortuary phases. Based on associated grave finds and the lack of habitation sites near the cemetery, it has been hypothesised that both burial populations came from a certain distance of the site (*ca.* 20 km) and that they relied on land rather than marine resources. We tested these hypotheses, based on material culture, through stable isotope analysis. The aim was to understand the populations' diet and geographic origins. We sampled 47 human individuals and eleven sets of faunal remains from both phases for stable isotope analysis (carbon, nitrogen, sulphur and oxygen) of bone and dental collagen, and apatite. Modern samples of autochthonous food were also tested as a baseline for comparison. The results showed preservation differences between the remains from both phases. Individuals from Phase 1 provided the best isotopic dataset and showed consumption of protein from marine resources and C<sub>4</sub> plants. On the other hand, bioapatite carbon and oxygen stable isotope results from both phases highlighted differences in C<sub>4</sub> plant consumption and individuals of possible non-local origin. The results underline the need to study further the effect of brewed or cooked beverages on bioapatite oxygen levels. Finally, results from Phase 1 fit with the broader dietary pattern evident in other Andean sites, where coastal populations consumed marine protein and C<sub>4</sub> plants, as opposed to highland populations who relied on terrestrial protein sources and C<sub>3</sub> plants.

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### 1. Introduction

Isotopic analyses on Andean archaeological populations have been conducted to understand sociopolitical changes, warfare and violence, the transition to agriculture, diet and intra-population variations in diet, seasonality of death, as well as human migration and mobility patterns (Burger and Van der Merwe, 1990; Buzon et al., 2011; Conlee et al., 2009; Finucane et al., 2006; Henry, 2008; Kellner and Schoeninger, 2008; Knudson et al., 2007, 2009; Tomczak, 2003; Tykot et al., 2006, 2011; Webb et al., 2013a, 2013b; Williams, 2005; Williams and Katzenberg, 2012). Previous research showed that coastal populations

after the development of agriculture tended to rely on C<sub>4</sub> plants (*e.g.*, maize (*Zea mays*)) and seafood (marine proteins) or terrestrial proteins (Tykot et al., 2006; Webb et al., 2013a). Studies in the Nasca region have also revealed the presence of non-locals within the burial populations (Conlee et al., 2009; Webb et al., 2013b).

The site of Tablada de Lurín (Fig. 1), on the Peruvian central coast, with its large funerary occupation of several hundred individuals spanning four centuries (200 BC–AD 200), offers an opportunity to explore further the diet of coastal populations and the local origins of the people buried at the site. Along the Peruvian central coast, the period between the decline of Chavín de Huántar (*ca.* 500 BC; Rodríguez<sup>1</sup> and Haas, 2015) and the

*Abbreviations:* EIP, Early Intermediate Period; ICRP, International Commission on Radiological Protection; IAEA, International Atomic Energy Agency.

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<sup>1</sup> Spanish and Latin American authors usually have two last names. Please note that for ease of reading, authors are cited in text only with their first last name, but appear in the Literature Cited with both last names in alphabetical order according to the first last name. *E.g.* Rodríguez Kembel is cited as Rodríguez, and listed as Rodríguez Kembel (as this is how the author's name appears in the publication), appearing between the letters Q and S. When authors have a composite last name, this remains unchanged (*e.g.*, Van der Merwe).

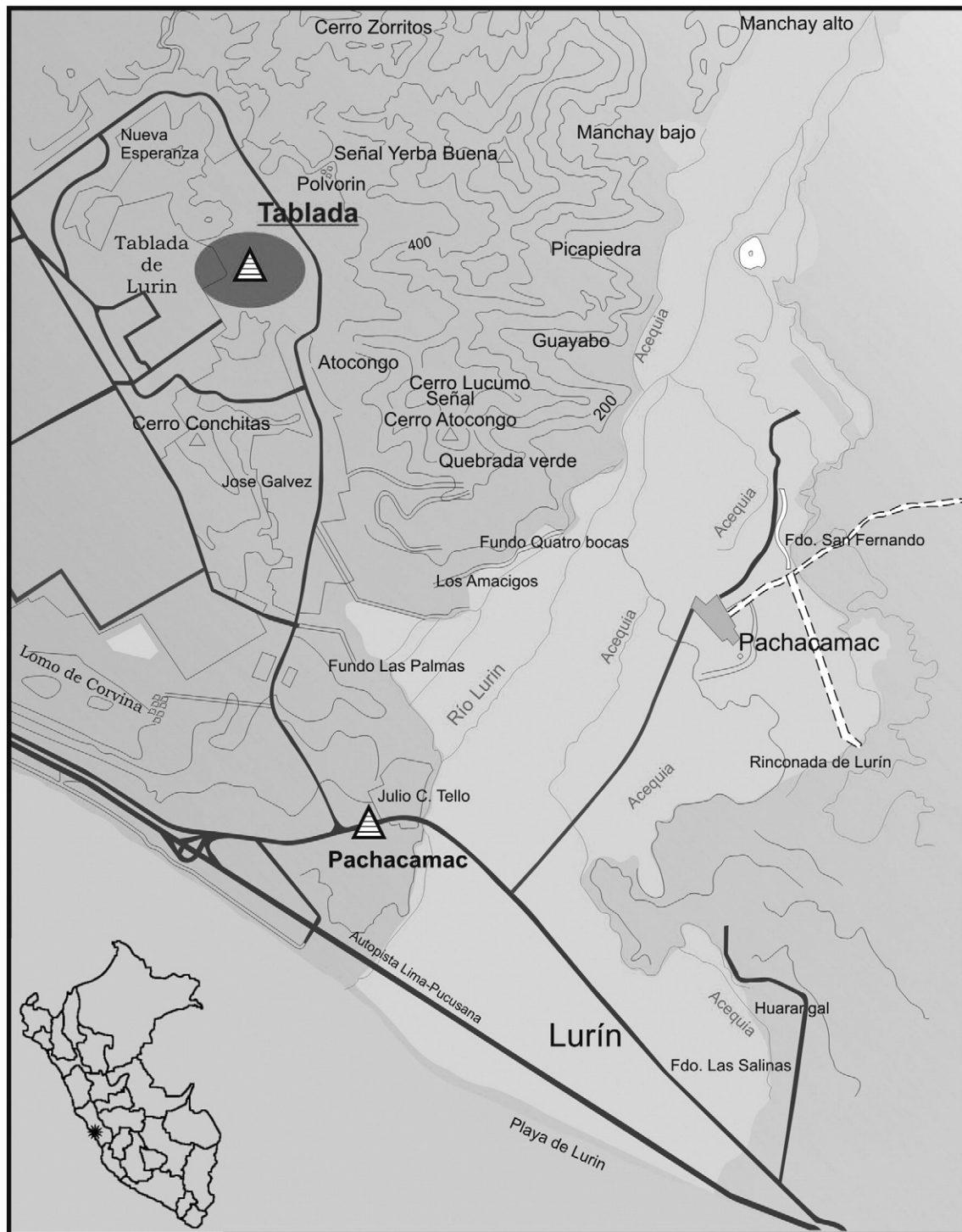


Fig. 1. Location of the archaeological site Tablada de Lurín, Lima, Peru.

appearance of the Lima culture (AD 300–500; Narváez, 2014; Patterson, 1966) sees the establishment of extensive cemeteries (Tablada de Lurín, Ferrocarril, El Panel, and Lomo de Corvina; Maguiña and Paredes, 2009; Pechenkina and Delgado, 2006), but neither large settlement sites nor the construction of large building works, typical of earlier and later periods. It is possible these large cemeteries represent central places of burial, where groups of communities congregated to bury their dead, with a shared set of funerary and religious beliefs.

This study combines isotopic data with material evidence from the burials in order to understand people's dietary habits, livelihoods and local origins. Diet was explored through carbon ( $\delta^{13}\text{C}$ ) and nitrogen ( $\delta^{15}\text{N}$ ) isotope analysis from human bone and dental samples recovered from Tablada de Lurín. Local origins and migration patterns were inferred through oxygen ( $\delta^{18}\text{O}$ ) and sulphur ( $\delta^{34}\text{S}$ ) isotopes from the same samples. To the authors' knowledge, this is the first time  $\delta^{34}\text{S}$  isotope analysis has been conducted on human bone and tooth samples from the central Andes.

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