

TERRESTRIAL VERTEBRATES IN MIS 6 TO MIS 5 DEPOSITS OF THE ZANNONA QUARRY (FAENZA, ITALY)

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ABSTRACT: We report few vertebrate remains from the Middle-Upper Pleistocene continental deposits of the Zannona quarry (Faenza, Italy), including two incomplete upper dental series of *Stephanorhinus hemitoechus*, a frontal with antlers of a cervid, and a fragmentary left scapula of an equid. This material provides additional information on the poorly known terrestrial faunal assemblages of the Quaternary deposits in the Romagna Apennine foothills. Data presented here are discussed within the framework of the well documented stratigraphic transition between the MIS (Marine Isotope Stage) 6 and 5 and support the role of vertebrate continental fauna in the correlation between marine and non-marine successions.

Keywords: Middle to Upper Pleistocene, Continental Stratigraphy, Mammals, Biochronology.

1. INTRODUCTION

The Zannona quarry site (Cava Zannona of local road signs) is located within the homonymous pit cave of pebbly and sandy material located a few kilometres south of the city of Faenza (Ravenna, Italy) in the Apennine foothills (Fig. 1). The active quarry, located at about 60 meters above sea level on a wide terrace of the Marzeno alluvial fan, is responsible for the exposure of deposits that are here referred to the *Palazzone Morphostratigraphic Unit* (Curzi et al., 1987) (Fig. 2). Exposed alluvial deposits reach a maximum thickness of 10-15 meters and rest unconformably on the uppermost deposits of the Pliocene to Pleistocene marine sequences of the Romagna Apennine (i.e. *Argille Azzurre* and *Sabbie Gialle* formations). Such alluvial deposits have been recently included in the *Subsintema di Bazzano* (Amorosi et al., 2009), which consist of coarse alluvial fan deposits interbedded with fine-grained alluvial plain beds. The Bazzano Subsynthem is dated to the uppermost Middle Pleistocene between 230 and 130 Ka (Amorosi et al., 2009). The Zannona quarry deposits have been the subject of periodic investigation for a decade before the discovery in 2012 of nicely preserved vertebrate remains. Specimens collected from the site allow to improve the chronostratigraphic and environmental resolution of the continental deposits of the area. Data presented here support the role that vertebrate faunal turnover play in our palaeoecological understanding of cyclic warm and cool stages in the Italian Pleistocene continental successions. In particular, based on a more accurate chronostratigraphic and palaeoclimatic zonation of the Middle to Late Pleistocene interval, this study attempts a correlation between terrestrial bio-events and the standard chronostratigraphical time

scale and in particular with the Marine Isotope Stages (MIS) 6 and 5 (Sanchez Goñi, 1999; Amorosi & Colalongo, 2005; Ferranti et al., 2006; Antonioli et al., 2009; Bertini et al., 2010).

2. SYNTHETIC STRATIGRAPHY OF THE CONTINENTAL DEPOSITS

The continental deposits exposed at the Zannona quarry rest unconformably on the Sabbie Gialle Formation, and are divided into two Unconformity-Bounded units showing increasing transgressive trend upwards (Fig. 3). The lower UB unit is bounded at its bottom by a basal unconformity having regional extension and marking a major depositional hiatus, and by a prominent palaeosol at its top. The upper UB unit is bounded by the same palaeosol at the bottom and by a thick vetusol at the top.

The basal deposits of the first interval are represented by a tabular and laterally continuous layer of coarse gravel (\varnothing max \approx 50 cm) with an average thickness of 5-6 meters (lower gravel layer in Figs. 3 and 4). These braided-stream, channel deposits yielded an equine scapula as well as poorly preserved floated manufactures. Basal deposits fine upward into clay-dominated, tabular beds with minor silt and fine-grained sandy deposits showing planar parallel stratification: overall, such alluvial and colluvial strata reach a thickness of 8-10 meters. This interval is also topped by a dark-grey to brown-colored, 40-60 cm thick, clay-silty buried soil which represents an important marker in the study area, cropping out over several square kilometers near the Zannona quarry (Fig. 5). This distinctive palaeosol has been originally reported from the Spalancona locality by