

Reply

Reply to Marra, F. Comment on “Palombo et al. The Lost MIS 11c Mammalian Fauna from Via dell’Impero (Rome, Italy). *Quaternary* 2024, 7, 54”

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Abstract: Here we provide a brief reply to the comment by Fabrizio Marra on “The Lost MIS 11c Mammalian Fauna from Via dell’Impero (Rome, Italy)”. The comment deals with our omission of the citation of a paper reporting ⁴⁰Ar/³⁹Ar dating that, according to Marra, would have been fundamental for our study. However, while recognizing that the omission of this article was a pity, we herein demonstrate that this did not affect in any way the results of our study, and that Marra’s comment contains contradictory affirmations and relies on a merely speculative hypothesis.



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We sincerely regret not having properly cited and used the ⁴⁰Ar/³⁹Ar dating of a pumice layer embedded in fluvial deposits at Capitoline Hill within the Forum of Caesar [1], along the Via dell’Impero—the same area investigated in Palombo et al. [2]—an oversight that was considered by Marra to be serious enough to warrant a comment [3]. The eighteen papers that Fabrizio Marra co-authored and that we cited [2] attest to his substantial and continuous contribution to the study of the stratigraphy and chronology of the Campagna Romana Quaternary deposits.

That said, contrary to Marra’s claim, the omission of this information did not, in fact, compromise in any way the results of our study or their interpretation. In fact, independently of the ⁴⁰Ar/³⁹Ar dating we failed to cite—but in agreement with it—our tephrochronology data enabled the correct assignment of the historical findings of the Via dell’Impero faunal remains. Indeed, we assigned the fossiliferous sediments to the Tiber River fluvial-deltaic aggradational succession formed during glacial termination V and the subsequent MIS 11c sea-level highstand, known as the San Paolo Formation or the Torino Formation [2] (specifically, see the third and fifth lines of the fourth paragraph on page 27). In this regard, Marra’s claim is therefore understandable. He writes, “Also incomprehensibly, the authors do not frame the sediments in which the faunal remains and the pumice they analyzed are embedded within the proper chronostratigraphic context represented by the San Paolo Formation” [3].

Later, in his final sentence, Marra writes, “Finally, the age of 415 ka yielded by the bedded pumice cropping out in Via dell’Impero provided a straightforward correlation

with the Vico α eruption, as opposed to the attribution to Vico β (406 ka) based on the interpretation of the geochemical composition of the pumice adhering to the faunal remains, a fact that deserved at least to be discussed" [3]. However, the thesis that the age of 415 ka provides a straightforward correlation with the Vico α eruption is merely a speculative hypothesis that can be easily refuted. Indeed, the San Paolo Formation is characterized by the occurrence of four tephra and/or volcanoclastic layers [4], including the La Rosta 2 pumice fall deposit (SPF1, c. 436 ka) from the Sabatini volcanic field, the Vico alpha and Vico beta pumice fall deposits (SPF3 and SPF3a, c. 415 ka and 406 ka, respectively) from the Vico volcano, and a volcanoclastic layer deriving from mixed Vico and Colli Albani volcanic deposits (SPF4, c. 403 ka). Therefore, what is the evidence indicating that the pumices we examined derived from the Vico α eruption, as Marra claims, and not from the Vico β as proposed in Palombo et al. [1]? Vico α is only one of four layers pertaining to the San Paolo formation. Hence, the fact that the sedimentary succession containing the faunal remains also contains this tephra, as documented by the dating by Karner et al. [1], does not necessarily imply that the pumices associated with the faunal remains are from this eruption and not from other eruptions, likewise documented in the San Paolo Formation. In fact, based on the geochemical fingerprinting of glass, the pumices and glass particles included in the sediment adhering to the surfaces of the Via dell'Impero faunal remains are geochemically ascribable to the Vico β eruption [2], and not the Vico α eruption, as Marra speculates. Furthermore, the stratigraphic link between faunal remains collected a century ago and the pumice layer dated by Karner et al. [1] cannot be determined retroactively due to a lack of information. Given that the pumices from the sediments adhering to the faunal surface geochemically match the more recent Vico β eruption, we would have only speculated that the pumice layer dated by Karner et al. [1] was likely within the same succession containing the faunal remains (i.e., in the San Paolo Formation), but somewhere stratigraphically below them, without a strict relationship.

In summary, the central argument of Marra's comment seems to rely either on contradictory assertions or on largely speculative hypotheses.

Conflicts of Interest: The authors declare no conflict of interest.

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