



A review of the geologic sections and the faunal assemblages of Aurelian Mammal Age of Latium (Italy) in the light of a new chronostratigraphic framework

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ABSTRACT

The Aurelian Mammal Age for peninsular Italy was introduced on the basis of faunal assemblages mainly recovered at sites along the Via Aurelia west of Rome. These sites exposed a set of sedimentary deposits currently attributed to the Aurelia and to the Vitinia Formations correlated with MIS 9 and MIS 7, respectively. In the present paper we reconstruct the geologic-stratigraphic setting in the western sector of Rome within the wider context of glacio-eustatically controlled, geochronologically constrained aggradational successions defined for this region. We present a chronostratigraphic study based on dedicated field surveys, that, combined with five new ⁴⁰Ar/³⁹Ar ages and eighteen trace-element and EMP glass analyses of volcanic products, allow us to revise age and correlation with the Marine Isotopic Stages for 10 sites out of 12 previously attributed to the Aurelia Formation and the Torre in Pietra Faunal Unit. In particular, we demonstrate a MIS 13/MIS 11 age for several sections along the Via Aurelia between Malagrotta and Castel di Guido. Based on this new geochronological framework, the first occurrences of *Canis lupus* and *Vulpes vulpes* in Italy are antedated to MIS 11, within the Fontana Ranuccio Faunal Unit of the Galerian Mammal Age, consistent with the wider European context. This contribution is intended as the groundwork for a revision of the Middle Pleistocene Mammal Ages of the Italian peninsula, according to the improved chronostratigraphy of the geologic sections hosting the faunal assemblages.

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1. Introduction

The Aurelian Mammal Age (AMA) is based on the faunal assemblages mainly recovered at several sites along the Via Aurelia west of Rome (Gliozzi et al., 1997, Fig. 1). These sites exposed a set of continental to transitional sedimentary deposits that were

attributed by the authors to the Aurelia and to the Vitinia Formations. Deposition of these successions was correlated with Marine Isotopic Stage (MIS) 9 and MIS 7, respectively, based on rather weak geochronological markers pointing out to an age around 350–300 ka for the former one (Conato et al., 1980). Within the AMA, two faunal units (FU) corresponding to the Early and to the Middle Aurelian were defined: Torre in Pietra FU and Vitinia FU, correlating to MIS 9 and MIS 7, respectively (Gliozzi et al., 1997). Representative local fauna for the Late Aurelian was recognized only later on (Melpignano FU and Ingarano FU; Petronio et al., 2007).

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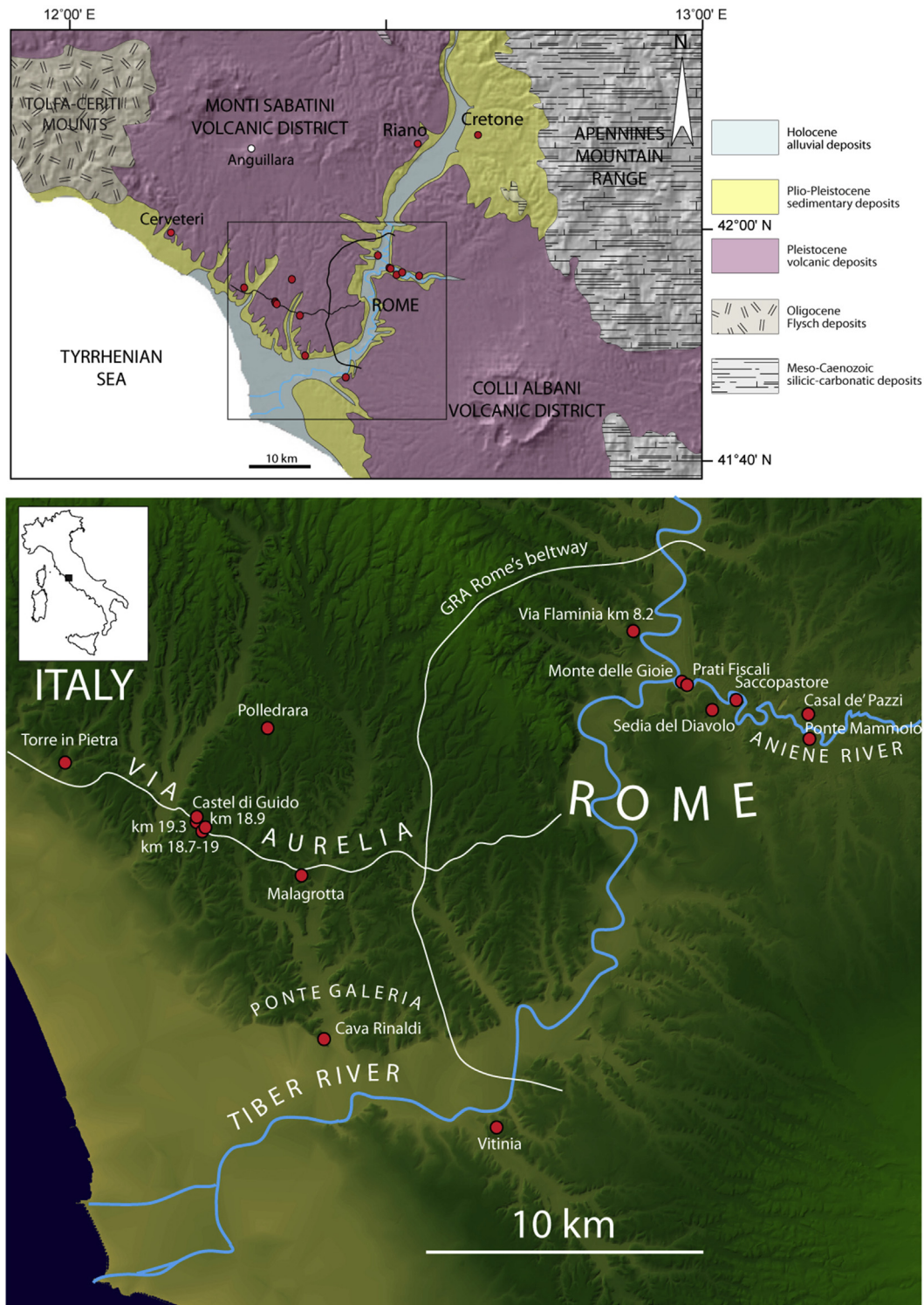


Fig. 1. a) Regional geologic scheme and b) location map of the investigated sites.

Gliozzi et al. (1997) and Petronio et al. (2011), proposed that the beginning of the AMA was approximately in correspondence with MIS 10 and characterized by the appearance of the taxa representing the core of the present day mammal fauna, considered to mark the early Aurelian or Torre in Pietra FU (MIS 10–9). In particular, the faunal renewal in this region was characterized by the disappearance of the cervid species *Megaloceros savini*,

Praemegaceroides verticornis, *Cervus elaphus acoronatus*, which were replaced by *Megaloceros giganteus*, along with the spread of the quasi endemic subspecies of *Cervus elaphus rianensis*, and by the first occurrence (FO) of several carnivorous species, including *Mustela putorius*, *Ursus spelaeus*, *Vulpes vulpes*, *Canis lupus*, *Felis silvestris*, and *Panthera spelaea*. However, the Italian FO's of these latter species postdate those reported in the literature for western

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