

## 1 Mid - Late Holocene sea level changes and the Roman fish tanks. One day field trip to Punta della Vipera and Castrum Novum (Civitavecchia)

**Excursion Leaders: Anzidei - Enei**

Proposed Excursion Dates: 16th July 2023

Draft Itinerary: Departure from Rome by bus to Santa Marinella (near Civitavecchia). Stop in the morning at Punta della Vipera and later at Castrum Novum (Santa Marinella). Lunch at a local restaurant and back to Rome in the late afternoon. There are no facilities at Punta della Vipera (1<sup>st</sup> stop). At Castrum Novum, facilities include bar, restaurant and bathhouse. Possibility to visit the nearby archaeological excavation of Castrum Novum.

Definitive cost per head: € 120

### Proposer Contact Details:

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### Description

The fish tanks of Punta della Vipera and Castrum Novum are located between Civitavecchia and Santa Marinella, at about 1 hour by car from Rome. These astonishing fish tanks shows a series of basins characterized by architectural features bearing with past sea level. Recent studies have shown that instrumental records indicate that ocean volumes during the 20th century have increased so as to raise eustatic sea level by ~2 mm/year and the few available records suggest that this is higher than for the previous century. While geological data indicate that ocean volumes have increased since the main phase of deglaciation about 7000 years ago but whether this continued into the recent past remains unclear. The above analysis has been important for establishing whether the recent rise is associated with global warming or is part of a longer duration non-anthropogenic signal.

Archaeological evidence from Roman age fish tanks provide a precise measure of local sea level of at 2000 years ago. Part of this change is the result of ongoing glacio-hydro isostatic adjustment of the crust subsequent to the last deglaciation. A comparison with tide-gauge records from nearby locations and with geologically constrained model predictions of the glacio-isostatic contributions establishes



that the onset of modern sea-level rise occurred in recent time at  $\sim 100 \pm 53$  years before present.

The field trip, besides the geoarchaeological description, includes a guided swimming tour into the pools to discover the hydraulic features of this maritime structure. It is recommended to bring mask, snorkel, underwater camera, sunscreen and towel.