LA VALLE PONTINA NELL’ANTICHITÀ

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<table>
<thead>
<tr>
<th>Premessa</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMA GIORNATA</td>
<td></td>
</tr>
<tr>
<td>Archaeology and land evaluation in the Agro Pontino, H. Kamermans, S.H. Loving, A. Voorrips</td>
<td>9</td>
</tr>
<tr>
<td>La presenza umana nella Pianura Pontina durante il Paleolitico medio e superiore, M. Musso, D. Zampetti</td>
<td>13</td>
</tr>
<tr>
<td>Nuovi modelli di ricerca archeologica: il caso di Grotta Barbara al Monte Circeo, M. Musso, D. Zampetti</td>
<td>17</td>
</tr>
<tr>
<td>La necropoli dell’Ètà del Ferro di Caracupa, M. Angle, A. Gianni</td>
<td>23</td>
</tr>
<tr>
<td>Nuova metodica per la diagnosi di talassemia in paleopatologia, A. Ascenzia, M. Brunori, G. Citro, R. Zito</td>
<td>31</td>
</tr>
<tr>
<td>Satricum e Pometia, G. Stibbe</td>
<td>33</td>
</tr>
<tr>
<td>L’immagine imperiale delle paludi Pontine, G. Traina</td>
<td>39</td>
</tr>
<tr>
<td>A proposito di CN. Domitius Calvius e la colonia triumvirale di Terracina, M. Cancellieri</td>
<td>45</td>
</tr>
<tr>
<td>Mutamenti economici e sociali nella valle Pontina tra media e tarda repubblica, F. Coarelli</td>
<td>51</td>
</tr>
<tr>
<td>SECONDA GIORNATA</td>
<td></td>
</tr>
<tr>
<td>Feronia, un culto sabino nel territorio volso, P. Longo</td>
<td>59</td>
</tr>
<tr>
<td>Management dei beni culturali ed ambientali nella società moderna, M. Zei</td>
<td>63</td>
</tr>
<tr>
<td>Archeologia, divulgazione, territorio, F. Pierluissi</td>
<td>67</td>
</tr>
<tr>
<td>Via delle Colonne: un progetto di restauro urbano, A. Di Noto</td>
<td>71</td>
</tr>
<tr>
<td>Cori: case e torri (XII-XVI sec.), ricognizione e problemi, E.M.C. Scoditti</td>
<td>73</td>
</tr>
<tr>
<td>La valle pontina nella cartografia della Collezione Disegni e Piante dell’Archivio di Stato di Roma, R. Giaffei</td>
<td>79</td>
</tr>
<tr>
<td>Un’iscrizione funeraria a Cori, N. Cassieri</td>
<td>101</td>
</tr>
<tr>
<td>Prime osservazioni sulla mammalofauna del pleistocene superiore di Grotta Barbara (Monte Circeo), L. Caloia, M.R. Palombo</td>
<td>103</td>
</tr>
<tr>
<td>Il territorio pontino meridionale negli anni della bonifica, R. Riggi</td>
<td>105</td>
</tr>
<tr>
<td>TAVOLE</td>
<td>109</td>
</tr>
</tbody>
</table>
ARCHAEOLOGY AND LAND EVALUATION IN THE AGRO PONTINO
Hans Kamermans¹, S.H. Loving & A. Voorrips².

The Agro Pontino project is a regional archaeological project sponsored by the Albert Egges van Giffen Instituut voor Prae- en Protohistorie of the University of Amsterdam in Holland in cooperation with several other institutes in Italy: the Istituto Olandese, the Soprintendenza Archeologica per il Lazio, the Istituto Italiano di Paleontologia Umana and the Museo Preistorico Etnografico Luigi Pigorini (Voorrips et al. 1983). The project is directed by Albertus Voorrips, Susan Loving, both from the University of Amsterdam, and Hans Kamermans, from the University of Leiden.

In this paper we will first present something about the history and the main research goals of the project, and then we will focus on one aspect: the application of the land evaluation technique. We show the procedures and give preliminary results; we are still in the process of collecting and analyzing our data¹.

Since 1967 scholars and students of the Institute for Physical Geography and Soil Science of the University of Amsterdam have been working on a soil map of the Agro Pontino (Sevink ed al. 1984). During the soil survey archaeological material was encountered and in 1979 the Institute for Prehistory of the University of Amsterdam started an archaeological project in the Agro Pontino. This project consists primarily of an intensive archaeological survey designed to locate and interpret finds dating from the Middle Palaeolithic to the Middle Ages. Integrated within the project are specialized studies, such as locating differences between Middle and Upper Palaeolithic hunting behavior (Voorrips et al. 1985) and the application of the land evaluation technique to the investigation of changing patterns of prehistoric landuse (Kamermans et al. 1985).

The theoretical background for the use of the land evaluation technique in archaeology has been published elsewhere (Kamermans et al. 1985). Here, we will limit ourselves to the illustration of this technique with our research in the Agro Pontino. Land evaluation is the utilization of social and economic parameters for evaluating the physical data about environmental potential. In archaeology land evaluation entails the collection of land characteristics and archaeological data about past forms of land use in order to identify socio-economic contexts.

The first of our basic inventories (surveys) consists of the collection of data about the geological, geomorphological and pedological history of the area. The geology of the Agro Pontino has been studied and published by Italian geologists (Blanc, Segre & Tongiorgi 1953; Segre 1957; 1969). A map of the geomorphology of the area was published by A.C. Blanc (1937). The pedological research by the Dutch physical geographers resulted in several publications (cf. Sevink 1977; Remmelzwaal 1978; Sevink et al. 1982; 1984). A report about a soil survey in the northern part of the Agro Pontino will be published soon.

Because the Agro Pontino is a coastal plain surrounded by the Monti Lepini, the Monti Ausoni, the Tyrrhenian sea and the low hills south of Rome, we consider the survey area as a more or less closed area, a physiographic unit. Geologically speaking, the area consists of two parts, a low lying graben, filled with clayey and peaty sediments, and a sandy dune area along the coast, both dating from the Quaternary. Part of the graben is covered by col素养. The calcareous mountains along the north of the Agro Pontino, and Monte Circé, an isolated part of the Appenines, were formed during the Mesozoic.

The soil map of the area shows that along the coast four marine terraces can be distinguished. Estimated dates are 500,000 BP (Milazzian), 100,000 BP (Tyrrhenian II), 70,000 BP (Tyrrhenian III), and post-glacial (pre-Neolithic).

Theoretical conditions exist for collecting paleo-ecological data: the marshy peat in the slowly sinking graben is a mine for paleo-botanical samples and the caves in the surrounding Appenines and Monte Circé have yielded well-preserved paleo-zoological samples. Until recently not much was published about the vegetational history of the Agro Pontino (Tongiorgi 1936). Our project has collected several samples for palynological

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³ A somewhat expanded version of this paper has been published in Kamermans et al. 1985.
analysis from the graben and from the fossil lagoons in the area (Eisner et al. 1984; in press). One of these coresamples, taken at a place called Mezzaluna near Sezze, has a continuous record dating from approximately 16,000 to 4,500 BP, and has given a general indication of the climatic and vegetational history since the late glacial. Several other samples are now being analysed.

The bone material from the cave excavations and from Canale Mussolini gives a rough idea about the fauna from the last ice age onwards (Blanc & Segre 1933; Piperno 1976/1977).

To apply the land evaluation technique to this region, the information collected, described above, is used to make a qualitative land classification as follows. We use the boundaries of the soil map as a basis for our land units and add the necessary information for each unit. We show a land unit map based on the soil map and the Mezzaluna pollen core. It gives general vegetational reconstructions for three different time periods. C1 represents the latter part of the last glacial, approximately 16,000 BP. During this time period the climate was dry and cool. A represents a dune vegetation with pine, B is Artemisia steppe, C is fen located in the graben and D is sparse oak woods. During zone D1 (8,000 BP) the vegetational trend is towards a closed arboreal vegetation consisting mainly of climax forest species, indicating a more humid and possibly warmer climate. B has changed into a parkland vegetation with Artemisia and low shrubs, C has become an alder fen and D oak forest. D2 gives the situation for the neolithic period (6,000-5,000 BP) when the climate was already of a mediterranean type. A again represents a dune vegetation with pine and the addition of tamarix. B supports an open, dry vegetation with many herbs, C is an alder marsh with Dryopteris and D is a combination of oak forest and macchia-garrigue.

The next step is to construct a series of models of prehistoric socio-economic situations using ethnographic, archaeological and historical sources. From these models we derive land utilization types, for example, potential land for farming, for pasturage, etc., and compare those with our land mapping units. The outcome will be a model of land utilization types, for example, potential land for farming, etc., and compare those with our land utilization types. The data, however, suggest a certain kind of land use we may infer socio-economic situation for that time period.

We collect our archaeological data by means of our survey and by studying existing collections and publications (cfr. Bietti 1984; Blanc & Segre 1953; Taschini 1972). One of the main problems is the reliability of the archaeological record (Loving et al. in press). It is, of course, impossible to survey an area of 900 km² completely. For that reason we made a sampling design that consists of three phases. The main phase is a systematic non-aligned transect sample designed to select (a) a sufficient sample size for making probability statements about the archaeological populations in the Agro Pontino as a whole, (b) a sample which spatially 'covers' the NE-SW length of the Agro Pontino plain and is thus theoretically capable of detecting NE-SW variability, and (c) most important for the land evaluation study, a sufficient sample size from the environmental strata to make probability statements about the archaeological record in relation to soil parent materials. We selected five transect lines running from the sea towards the mountains. We try to survey all the fields crossed by these lines.

The screening of our archaeological data collected during the survey is an important theme in our research. We not only have to know the history of the landscape during the periods of our interest, but also during the later periods because we want to know how our archaeological material has been disturbed. For this reason we study old topographical maps and historical records, and we screen our data for determining factors other than prehistoric and historic activities that may have affected the archaeological finds distribution observed. All the information we have collected so far has been stored into a computerized database. That makes it possible to analyze, for instance, the influence of our survey methodology on the finds distribution. We have begun to assess the influence of visibility conditions of fields visited by the survey, the influence of the geological conditions, the influence of soil transport, and so on.

Now we will give you some very tentative results based on our survey data up to 1982. We indicate the findspots with late Palaeolithic material, in the Agro Pontino. From previous work we observed that some late Palaeolithic sites occurred in caves near the entrances of the Agro Pontino, what we termed 'strategic spots’, whereas sites from other periods did not. Strictly speaking, there are no 'strategic spots' on the plain proper comparable to those at the entrances of the plains that provide a long range of visibility. But there are places on the plain which afford limited visibility along drainage channels or places where animals might be expected to gather, such as depressions in the aeolian sands which, according to the pedological evidence, once collected water. After coding our data on the Agro Pontino proper regarding strategic and non-strategic spots (according to the criteria described above), our analyses showed a difference between the late Palaeolithic and the other periods in preference for strategic spots. Although more late Palaeolithic findspots occur at non-strategic spots than at strategic ones (about 2:1), far more findspots of other periods are found at non-strategic spots than at strategic ones (about 6:1). Using the palaeontological evidence from Monte Circeo and Canale Mussolini and the strategic spot variable, our next step will be to rank the land units as hunting territories and then see how the late Palaeolithic findspots are associated with the land units.

We also tested the hypothesis that Neolithic/Bronze age findspots are on fertile, light soils near streams as would be the case under an agriculturist model (the shading indicates the fertile soils). The data, however, suggest a mixed strategy with farming on the easily worked sandy soils and pastoralism elsewhere. Of course this picture may
change when we are able to better separate the Neolithic from the Bronze age finds spots.

The methodological approach of combining environmental and archaeological data to derive a prehistoric socio-econo-

mic model has been used implicitly in archaeology for a long time. The importance of the land evaluation technique is that it offers a more explicit and quantitative approach for regional archaeological research.

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Riassunto

Gli autori compiono una ricognizione di lunga durata dell’Agro Pontino. Lo scopo del progetto è di investigare i cambiamenti di insediamento dal Paleolitico medio all’età del Bronzo utilizzando tecniche di valutazione del terreno (come quelle del FAO) insieme con i dati archeologici, etnografici e storici. E’ descritta l’utilizzazione del suolo durante il Paleolitico superiore ed il Neolitico.
1 - Location of the Agro Pontino (drawing IPP)

2 - The land evaluation approach in Physical Geography and Archaeology (adapted from Brinkman & Young 1976).

3 - Geomorphological map of the Agro Pontino (adapted from Blanc 1937):
1 - Calcaric mountains.
2 - Tuff-covered hills.
3 - Peat filled grabe.
4 - Sandy-clayey marine terraces.
Tav. II

1 – The major sedimentary complexes in the Agro Pontino (adapted from Sevink et al. 1984).
I) beach ridge deposits, Terracina level
II) lagoonal deposits, Terracina level
III) beach ridge and gravelly deposits with lagoonal deposits, Borgo Ermada level
IV) lagoonal deposits, Borgo Ermada level
V) beach ridge deposits, Minturno level
VI) lagoonal deposits, Minturno level
VII) lagoonal deposits, Latina level
VIII) aeolian deposits
IX) alluvial and colluvial deposits (drawing IPP).

2 – Distribution of late Palaeolithic findspots (drawing IPP).

3 – Distribution of Neolithic/Bronze age findspots. Shaded area shows distribution of Chromic Luvisols (drawing IPP).
1 - Map of the Agro Pontino region showing distribution of land units based on dominant soil types and the pollen zones from the Mezzaluna core (Eisner et al. 1984).

a. Dominant Soil Types

b. Pollen Zone C1

c. Pollen Zone D1

d. Pollen Zone D2

