Biancana badland vegetation in relation to morphology and soil in Orcia valley, central Italy*

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with 1 photo, 3 figures and 5 tables

Abstract. An investigation on biancana badland vegetation in relation to morphology and soil was carried out in a study area, located in the Orcia valley (southern Tuscany, Italy) characterised by Pliocene sea clay outcrops. Both vegetation communities and soils were homogeneous and lacking in evolved stages. The distribution of plant communities was influenced more by soil moisture, generally related to morphology, than by soil type. Two vegetation types were found to be closely related to environmental types: the Parapholido-Artemisietum cretaceae to biancana micropediments and the Phalarido coerulescentis-Agropyretum to impluvium lines and slope bottoms. Bromus erectus grasslands with different shrub cover were found on several morphologies and soil types with different species abundance in relation to the environment, but without any special floristic differentiation.

Keywords: badland vegetation, biancana badlands, central Italy, morphology/soil/vegetation relationships, Pliocene clay vegetation.

1. Introduction

Plio/Pleistocene sea clays outcrop over large areas of Italy. Rodolfi (1991) grouped the main erosion phenomena, which create peculiar landscapes, into two main categories: “calanchi” and “biancane” (plurals of “calanco” and “biancana”). The former are hydrographic basins of moderate size, usually horseshoe-shaped and consisting of several small valleys separated by sharp ridges. The latter are small dome-shaped reliefs, not higher than 20 m, generally devoid of vegetation on the southern slope (Guasparrì 1978, Alexander 1982); their morphological features are determined by the tectonic fracture system (Colica & Guasparrì 1990).

The vegetation of these badlands is very characteristic and has been the subject of various geobotanical investigations. The research of Zangheri (1942) in the Romagna calanchi is worth mentioning for its accuracy, especially as regards the flora. Subsequently authors have described the vegetation of various calanchi areas (Gentile & Di Benedetto 1961, Ferrari & Galanti 1972, Ferrari & Grandi 1974, Ferrari & Speranza 1975, Pirone 1981, Hartmann & Oertli 1982b) revealing relationships with soil type (Hart-

* Research supported by National Research Council of Italy, Special Project RAISA, sub-project n 1, paper n. 2225

0340-269X/95/0025-0069 $ 4.75
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DOI:10.1127/phyto/25/1995/69
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