Forest vegetation on sacred sites of the Tangier Peninsula (NW Morocco) – discussed in a SW-Mediterranean context

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with 13 figures, 3 tables and 3 electronic appendices

Abstract: Forest stands on sacred sites can document climax or preclimax vegetation. However, little is known about the potential climax character of sacred sites in Morocco. We studied the vegetation of Muslim sacred sites and graveyards in rural regions of the Tangier Peninsula in Northwest Morocco. Sacred sites were chosen according to a pre-stratified random sampling method, taking climatic and edaphic patterns into account. In tree stands of 68 sacred sites 140 phytosociological relevés were sampled and classified. In an attempt to evaluate their degree of preservation, the best preserved holy forests were compared with reference data of similar forest communities, recorded mainly on non-sacred sites in southern Spain and Portugal, and northern Morocco and Algeria.

The forested vegetation of sacred sites shows a great variety. Abiotic factors, such as substrate and bioclimate, and human interventions (grazing, fire, a.o.) were found to be important differentiating factors. Besides well-conserved forests, a broad spectrum of degradation stages was documented. Most stands still shelter the original tree species combination, but vertical structure and floristic composition of the herb layer are strongly modified. Processes related to anthropo-zoogenic pressure, like therophytization, ruderalisation and overaging of the tree layer occur despite religious taboos.

Near-natural holy forests belong to various subtypes of the Teucrio baetici-Quercetum suberis and the Rusco hypophylli-Quercetum cocciferae. In comparison to forests on non-sacred sites, these holy forests are very well preserved, as is indicated by the presence of strict forest species of the Quercetalia ilicis and the Querco-Oleion sylvestris, by transgressives of the Quercetalia pubescentis, and by a high constancy and abundance of ombro- and mesophilous taxa. Moreover, the comparison of phytosociological data from Morocco and Spain indicated an Ibero-Mauretanian distribution of several Quercus suber communities.

In conclusion, sacred groves often seem to represent the potential natural vegetation. Exceptions are sacred groves with Wild Olive, which occur in an ecoregion where a thermomediterranean Quercus suber forest is considered to be the climax.

Keywords: evergreen Mediterranean forest, Quercetea ilicis, climax, degradation, holy forest, sacred grove, Marabout, Maghreb.

Abbreviation: PNV = potential natural vegetation

Introduction

A number of vegetation studies from India, Tibet, Japan and different countries of sub-saharan Africa focus upon the question whether so-called sacred groves, i.e. tree stands on sites protected by traditions or religious taboos, are documents of climax vegetation and how plant species and habitat diversity change under moderate human impact (e.g. GUNKO 1985, ITOW 1991, TIWARI et al. 1998, TCHAMIÉ 2000, MISHRA et al. 2004, UPADHYAYA et al. 2004, ANDERSON et al. 2005, CAMPBELL 2005, WASSIE et al. 2005, AERTS et al. 2006, KOKOU et al. 2008, LEBBIE & GURIES 2008, MIEHE et al. 2008, PANDY 2010). The results show that in cultural landscapes, which are intensely used for agricultural or pastoral purposes, sacred sites can shelter the last remnants of former widespread plant communities in a near-natural stage, thus documenting the PNV of an ecoregion. On the other hand, sacredness of a site does not completely prevent human impact. The protection status of sacred sites is only informal and can be violated (BYERS et al. 2001, CAMPBELL 2004, JUHÉ-BEAULATON 2010). Opening of the plant cover and changes in the floristic composition due to selective tree logging, fire, and heavy browsing can be observed (e.g. SALICK et al. 2007, KOKOU et al. 2008, DEIL et al. 2009). As a result of these anthropo-zoogenic effects, overall plant species diversity can increase by an invasion of euryoecious species into open forests and maquis, while a simultaneous loss of stenoecious forest taxa is observable.

In Northwest Africa (Morocco, Algeria, and Tunisia), tombs of Muslim saints and their surroundings are considered to be sacred sites. Especially in Morocco, the appreciation of the spiritual authority of patron saints (sing. ‘marabout’), religious brotherhoods (‘zawias’), and collective pilgrimages to the saints’ tomb are common and vivid phenomena

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