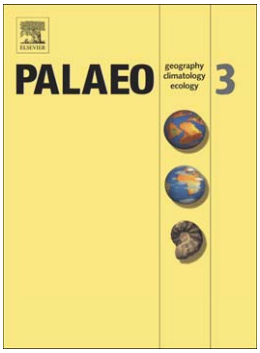

Holocene environmental history of a small Mediterranean island in response to sea-level changes, climate and human impact

Yoann Poher, Philippe Ponel, Frédéric Médail, Valérie Andrieu-Ponel, Frédéric Guiter

PII: S0031-0182(16)30674-5
DOI: doi:10.1016/j.palaeo.2016.10.037
Reference: PALAEO 8033

To appear in: *Palaeogeography, Palaeoclimatology, Palaeoecology*

Received date: 20 May 2016
Revised date: 25 October 2016
Accepted date: 31 October 2016

Please cite this article as: Poher, Yoann, Ponel, Philippe, Médail, Frédéric, Andrieu-Ponel, Valérie, Guiter, Frédéric, Holocene environmental history of a small Mediterranean island in response to sea-level changes, climate and human impact, *Palaeogeography, Palaeoclimatology, Palaeoecology* (2016), doi:10.1016/j.palaeo.2016.10.037

Holocene environmental history of a small Mediterranean island in response to sea-level changes, climate and human impact

Yoann Poher[1], Philippe Ponel[1], Frédéric Médail[1], Valérie Andrieu-Ponel[1], Frédéric Guiter[1]

[1]Institut Méditerranéen de Biodiversité et d'Ecologie marine et continentale (IMBE), Aix-Marseille Université, UMR CNRS IRD Avignon Université, Technopôle Arbois-Méditerranée, Bât. Villemin – BP 80, F-13545 Aix-en-Provence cedex 04, France

yoann.poher@imbe.fr, philippe.ponel@imbe.fr, frederic.medail@imbe.fr, valerie.andrieu-ponel@imbe.fr, frederic.guiter@imbe.fr

Abstract

The aim of this study is to investigate human-climate-environment interactions in a small Mediterranean island. Comparison between palynological and palaeoentomological data from the Greco pond (Cavallo Island, southern Corsica) reveals that the island was first covered by a more-or-less open *Erica arborea* pasture-woodland from *ca.* 7000 to 6100 cal. yr B.P. Grazing animals from 7000 to 6200 cal. yr B.P., followed by a spreading of *Ficus carica* (marked by the bark beetle *Hypoborus ficus*) from *ca.* 6100 to 5750 cal. yr B.P., suggest that human activities could be implicated in the *E. arborea* forest opening. From *ca.* 5500 cal. yr B.P., a regional expansion of *Q. ilex* was recorded, but an open landscape with thermophilous and drought-tolerant plants locally took place from *ca.* 4700 cal. yr B.P. onward. Pastoral and agricultural biomarkers (pollen, NPP and insect) together with archaeological evidence indicate that human activities were involved in the installation of a lasting open vegetation. Simultaneously, the effects of the Holocene relative sea-level r ise on the coastal wetland are recorded: (1) freshwater conditions prevailed in the Greco pond since 7000 cal. yr B.P. at least, (2) the first evidence of salt marsh development dates back to *ca.* 4500 cal. yr B.P., (3) a strong increase of salinity with marine intrusions were recorded at *ca.* 3700 cal. yr B.P. while a decline in aquatic insect diversity occurred and (4) a phase of sand dune formation was recorded from *ca.* 2000 cal. yr B.P. onward. Our results suggest that if large-scale climatic trend such as the Holocene relative sea-level rise could affect coastal ecosystem, effects of human activities could play the leading role in vegetation and terrestrial beetle assemblage changes in a small island context.

Keywords: Holocene; Coleoptera; pollen; Corsica; Mediterranean island; palaeoenvironment.