

## The drastic loss of Laurisilva forest after human arrival: A case study from Corvo Island

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Humans are a well-known threat to island biodiversity; however, the magnitude and dimension of flora loss is often not well understood. On Corvo island, in the Azores Archipelago and one of the most remote islands of the North Atlantic Ocean human land-use changes had a strong impact on the structure and function on its ecosystems. For instance, people removed the natural Laurisilva forest that dominated the island, resulting in the expansion of *Sphagnum*-dominated environments. In this study we obtained a 2000-year long plant macrofossil record from a sedimentary core in Lagoa do Caldeirão (400 m a.s.l.). We reconstructed the Laurisilva phytocenosis that surrounded the lake: *Juniperus brevifolia* and a rich epiphyte community of bryophytes and pteridophytes dominated a dense Laurisilva forest until the mid-12<sup>th</sup> century. A significant increase in the fragmented wood remains and charcoal particles between the mid-12<sup>th</sup> and 15<sup>th</sup> centuries signifies the onset of deforestation. In the second half of the 16<sup>th</sup> century, abrupt changes in vegetation occurred with the disappearance of the laurel forest. From the 17<sup>th</sup> century to the present day, pressure from livestock on the island led to a progressive increase in the abundance of *Sphagnum* and associated grassland species. The non-natural conditions of the present-day *Sphagnum*-dominated habitat illustrates a prime example of why the Habitats Directive of the EU requires a long-term perspective.

## POSTER

## Study of the influence of land use changes on hydrological flows in the River Guadiana basin (SW, Spain).

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The hydrological cycle is threatened by the changes of land use which are promoting an increase of water scarcity in the socio-ecosystem of Doñana, even enhanced by the effects of climate change. Land uses are related with the distribution of rainfall into different types of flows, the green water (evapotranspiration) and blue water (runoff and recharge) flows. This study assesses the influence of these land uses on the provision of hydrological flows in the River Guadiana basin, which represents a large part of the Doñana's socio-ecosystem. The hydrological model BalanceMED is used to quantify the hydrological functioning of this catchment through a georeferenced database. The results of the model are then weighted, taking into account the quantification of the land use changes occurred from 1956 to 2007. The results show by the one hand that land use and vegetation cover determine both types of hydrological flows, especially the magnitude of the green water flow. On the other hand, over the years, there has been an increase of the surface dedicated to irrigation, resulting in an extra supply of blue water flow that is not sustainable in the long-term. In contrast, the traditional rainfed agriculture has solely depended on the green water flow. This study highlights the importance of paying greater attention to the green water flow when managing water resources in the region, focusing on a more efficient agriculture in terms of water consumption to conserve the natural ecosystems. Ultimately, the idea of an integrated management of land and water uses is reinforced.