

## **PST06 - Old practices of pond deepening and their effect on biodiversity in the Doñana temporary pond network**

Díaz-Paniagua, C.<sup>a</sup>, Fernández-Zamudio, R.<sup>a</sup>, Florencio, M.<sup>a,b</sup>, García-Murillo, P.<sup>c</sup>, Siljestrom, P.<sup>d</sup>, Sousa, A.<sup>c</sup>, and Serrano, L.<sup>c</sup>

<sup>a</sup>Doñana Biological Station-CSIC, Sevilla, Spain

<sup>b</sup>Present address: Departamento de Ecologia, Universidade Federal de Goiás, Goiânia, Goiás, Brazil

<sup>c</sup>Department of Plant Biology and Ecology, University of Sevilla, Sevilla, Spain

<sup>d</sup>Instituto de Recursos Naturales y Agrobiología-CSIC, Sevilla, Spain

The pond network in the Doñana National Park, in SW Spain, is composed of more than 3000 temporary ponds that are usually dry during summer. This network is complemented with approximately 200 artificially deepened ponds that were transformed for old human uses (i. e., cattle drinking, farm irrigation, charcoal production). They are locally known as “zacallones”. We have recorded plant and animal species present in zacallones in order to assess their value for conservation. These water bodies act as permanent ponds; they are the reproductive habitats of those species with long larval phases, and the summer refuges of many coleopterans and heteropterans. They are also the habitats of plants that do not resist long dry phases. Some of these ponds are subject to occasional restoration tasks that mainly consist in the removal of thick bottom layers of mud. We have analysed and compared the water quality, and also animal and plant species richness of these ponds during two subsequent years after these tasks. Water quality was generally better in restored zacallones, and vegetation cover as well as animal and plant richness also increased. In unrestored zacallones, the concentration of total-P in the water was significantly higher than in recently restored sites. Additionally, the P-adsorption capacity of the sediment (estimated as the ratio between iron-hydroxides and P-inorganic fractions) was significantly higher in the restored sites. The removal of the bottom layer did not prevent the development of a rich community of aquatic macrophytes, including some threatened species. Our results suggest that zacallones can provide refuge to some significant species, particularly in recent years as the Doñana temporary ponds are being reduced in number and wet-phase duration (or hydroperiod). However, the water quality of these transformed ponds can deteriorate very rapidly (due to their small size and intensive use for wild fauna and cattle drinking), and hence they require periodical monitoring and management.