**Job Description:** Estación Biológica de Doñana (EBD)

| **Role**: Research Assistant  **Website**: [www.ebd.csic.es](http://www.ebd.csic.es/inicio) | **Location**:  Estación Biológica de Doñana CSIC (EBD)  C/ Americo Vespucio, s/n, 41092, Isla de la Cartuja, Sevilla |
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**Company Description**:

Doñana Biological Station is a public research institute belonging to the Consejo Superior de Investigaciones Científicas, CSIC, within the area of Natural Resources. Our primary mission is to carry out multidisciplinary research at the highest level, directed at understanding, from an evolutionary point of view, how biodiversity is generated, how it is maintained and damaged, in addition to the consequences of its loss and the chances of their preservation and restoration. Furthermore, it also promotes the transfer of scientific knowledge to society. The institute consists of a main building in Seville, which has an innovative Stable Isotope Laboratory (LIE) and two field stations, the ICTS Doñana Biological Reserve, (Doñana Natural Area, Almonte, Huelva) and Roblehondo Field Station (Parque Natural de las Sierras de Cazorla, Segura and Las Villas).

**Role Description**:

This project is called *CRAYMAP - Crayfish invasions across time and space, a multidisciplinary approach*. Biological invasions are one of the main drivers of Global Change. They cause alterations in ecosystem functioning, extinction and decline of native populations and severe socio-economic losses. Understanding the mechanisms associated with invasion processes to predict, prevent and mitigate biological invasions and their associated impacts is one of the major challenges facing conservation biology. The factors that determine the dynamics of an invasion are multiple, including the characteristics of the introduced species, those of the host environment, and the decisions, based on perceptions that people make with respect to it. Therefore, a comprehensive understanding of invasion processes requires the use of multidisciplinary approaches in which the human dimension is incorporated into natural science. The CRAYMAP project aims to investigate some of the patterns associated with invasion processes, through a multidisciplinary approach and at different spatio-temporal scales (e.g. introduction, spread...), using two species of crayfish as study models: the Italian crayfish (Austropotamobius fulcisianus) introduced in Spain in the 16th century, and the red-swamp crayfish (Procambarus clarkii), introduced in 1973. Some of the main lines of research of the project study: spatio-temporal variability of ecological niches, structure and genetic diversity of populations, evolution of the social image, social perceptions on impacts and management or interactions with other species.

The study of animal communities in aquatic environments is carried out most of the time through the capture of organisms. The different capture techniques can negatively affect wild populations and have associated capture biases (by different groups, species and/or sizes), which sometimes have a very important influence on the results of the studies. There are survey methodologies that do not involve capture, such as environmental DNA analysis, but they also have important limitations, such as taxonomic biases (different groups release different amounts of DNA into the environment) and the difficulty, if not impossibility, of estimating abundances.

This study aims to test the effectiveness and efficiency of underwater cameras for estimating crayfish populations in streams. During the spring, about ten streams of the Tinto and Odiel river basins with different densities of the invasive red-swamp crayfish (Procambarus clarkii) will be surveyed. Four cameras will be installed at each of the sampling points, two with bait and two without, which will record videos for one hour. Crayfish populations will be quantified by different metrics (e.g. frame with maximum number of individuals, proportion of random frames with crayfish and number of crayfish in them). These results will be compared with the catches obtained with fyke-nets, which will be left in the river for 24 hours, half of them with bait and the other half without it.

During the stay, the student will participate in the field work and in the visualisation and analysis of the resulting videos, which will be an initiation to the knowledge and study of river fauna, with a clear and simple experimental design.

**Required Applicant Profile**:

EBD are seeking graduates in animal behaviour, biology, botany, ecology, zoology or related fields to carry out a 13-week internship at their research institute in Seville, Spain. Participants will be encouraged to attend weekly seminars hosted by the institute. Spanish language skills are not necessary but would be an asset.