DOCTORAL INPhINIT FELLOWSHIPS PROGRAMME – INCOMING FRAME INFORMATION CALL 2020

PhD POSITION OFFER FORM

Position

1. Project Title: **Saving the European mulberry trees: Ecology, control, and socio-economic consequences of the new alien invasive Tiger longicorn beetle, *Xylotrechus chinensis***

   Job Position title: **PhD studentship**

2. Area of Knowledge: **(choose one option)**

- **LIFE SCIENCES**

3. Group of disciplines: **(choose one option):** **Ecology and Conservation**

LIFE SCIENCES

Medicine, Public Health, Sport Sciences, Nutrition, Clinical Psychology, Health Management
Animal, Plant, Environmental Biology, Physiology, **Ecology and Conservation**
Human Biology, Microbiology, Molecular Biology, Genetics, Cellular Biology, Genomics and Proteomics, Biochemistry
Agriculture, Veterinary Science, Animal Production, Forestry
Biotechnology, Bioinformatics, Pharmacy, Food Technology

PHYSICAL SCIENCES, MATHEMATICS AND ENGINEERING

Theoretical and Applied Mathematics, Computer Sciences
Physics

Geology, Earth Sciences, Environmental and Atmosphere Sciences, Mines, Geological Engineering, Oceanography, Hydrology
Civil and Construction Engineering, Energy, Nuclear Energy and Renewable Energy Engineering
Chemistry and Chemical Engineering
Telecommunications, Electronics, Robotics, Biomedical Engineering, Automation Engineering, ICT
Industrial Engineering, Mechanical Engineering, Metallurgy, Materials, Nanotechnology, Aeronautical, Naval and Aerospace Engineering

4. Research project/ Research Group description (max. 2.000 characters)

Mulberry trees provide shade and ornament to many streets and avenues in Europe, especially in the south, and are very much appreciated by people. In 2012 a new invasive species, the Tiger longicorn beetle, *Xylotrechus chinensis*, settled in Spain, and soon afterwards in Greece (2017) and France (2018). This beetle, native to the East Palearctic (China, Taiwan, Korean peninsula and Japan), attacks and eventually kills the mulberries. In the European countries invaded so far, the damage to trees is already significant, as well as the economic consequences. Human safety in public parks is also a concern since heavy beetle infestation increases the risk of falling branches; indeed, this has already happened in Spain, fortunately with no human injuries.

The biology/ecology of this beetle is not well known and there are no studies shedding light on possible ways to control it. In the meantime, despite social pressure for solutions, mulberry trees are being killed and maimed by the beetle, and cut/removed by the authorities, with no clear course to follow. This project will integrate socio-economic and policy studies with natural science studies to try solving this case.

Main goals:

- Predict the potential distribution of the Tiger longicorn beetle in Europe according to both current climate data and future climate warming estimates based on simulated climate data for the 2020s (2011–2040) provided by the Tyndall Centre for Climate Change Research and using CLIMEX 1.1.
- Study the local pathways of spread of this species
- Test if this beetle's pheromones can be used as mating disruption agents by setting them in the field. Carry out a classical search for possible predators/parasitoids. Test if endotherapy (using abamectine or others injected to mulberries) could be useful against their larvae.

- Apply value transfer techniques to estimate the costs of this invasion, for public entities (Councils) and private business

5. **Job position description (max. 2.000 characters)**

Position role: The Institute of Environmental Science and Technology (ICTA) is a 'Maria de Maeztu' awarded Institute belonging to the Universitat Autònoma de Barcelona. It is presently engaged in multidisciplinary studies concerning climate change and its consequences in the biosphere. The supervisor/co-supervisor are senior biologists (entomologist/botanist) with expertise and publications on this invasive species as well as in collecting environmental data related to atmospheric transport of biological elements, both well connected to public and private interest groups dealing with invasive organisms.

The PhD student would be part of this wide web of transversal studies, studying the ecology of this beetle, possible measures of control, and the socio-economic consequences of this invasion. He/she will also look at the effects climate change has had (or might have had) facilitating the settlement and spread of the Tiger longicorn beetle in Spain and Europe.

Responsibilities: The PhD student will be fully dedicated to his/her study and will carry out the five main goals stated above. This will include, apart from field studies, the gathering of ecological and economic data from all entities involved in dealing with this invasive species, at local and superior levels in the Administration and Research Centers in Spain.

Skills required: Applicants should have a background in biology or environmental sciences. They should be willing to learn about insect ecology and invasive species dynamics. In addition, they should master statistical analysis to be able to process all data gathered.

Group Leader

1. Title: **PhD. Senior Researches at ICTA**
2. Full name: **VICTOR SARTO I MONTEYS**[1] (Leader) **& JORDINA BELMONTE**[2] (Co-leader)
3. Email: Victor.Sarto@uab.cat
4. Research project/ Research Group website (Url):

"Biological implications and economic values of changes in relevant Iberian insects due to climate change" María de Maeztu Project

"Nuevas Tecnologías para el estudio de la diversidad y dinámica de componentes aerobiológicos y de su pronóstico en base a la Meteorología" MINECO Project

5. Website description:

*1 Entomology http://icta.uab.cat/

*2 Botany (within Aerobiology) http://lap.uab.cat/aerobiologia

Additional website (optional, max. 5 websites)

1. Url:
2. Website description: