



University of Genova

Department of Earth, Environmental  
and Life Sciences

Doctorate Course in Earth and  
Environmental Science and  
Technology

Università degli Studi di Genova



Dottorato in Scienze e Tecnologie  
per l'Ambiente e il Territorio

## Curriculum in biology applied to agriculture and the environment

Research Theme n. 2

<p><b>Titolo</b> "Biologia ed ecologia di specie aliene invasive: <i>Scyphophorus acupunctatus</i> e <i>Xylosandrus compactus</i>" <b>Title</b> ""Biology and ecology of invasive alien species: <i>Scyphophorus acupunctatus</i> and <i>Xylosandrus compactus</i>"</p>
<p><b>Tutor:</b> Prof. Mauro Mariotti <a href="mailto:m.mariotti@unige.it">m.mariotti@unige.it</a> <b>Co-tutors:</b> Prof. Stefano Vanin <a href="mailto:Stefano.vanin@unige.it">Stefano.vanin@unige.it</a> Dr. Elena Zappa <a href="mailto:gbhelena@unige.it">gbhelena@unige.it</a></p>
<p><b>Program description including the formation program abroad</b> The project aims to train qualified researchers in the field of plant-insect interaction with a particular focus on two invasive alien species (IAS): the agave snout-nosed weevil (<i>Scyphophorus acupunctatus</i>) and, as a secondary alternative, the black twig borer (<i>Xylosandrus compactus</i>). The research is also aimed at highlighting any relationships between infestations and climate change, as well as at planning biological control interventions for the control of the mentioned species.</p> <ul style="list-style-type: none"><li>- monitoring (by various techniques) of the considered IAS and of the biodiversity levels before, during and after the treatments;</li><li>- damage assessment techniques in the various parasitized species;</li><li>- evaluation of the relationship between the trend of infestations and the main environmental parameters.</li></ul> <p>Furthermore, biomolecular investigations could be developed connected with the evaluation of the possible causes that underlie the variability of plant resistance to the aforementioned parasites. Techniques: monitoring of insects and other organisms by traps and other methods; optical and scanning electron microscopy, spectrophotometry tests, HPLC (high performance liquid chromatography); in vitro culture of mycological and plant material; statistical analysis. Collaborations: given the multidisciplinary nature of this project, periods of mobility are foreseen in the Research Centers with which our laboratory is collaborating on a permanent basis. In addition, a period of 3 months in qualified foreign institutions may also be envisaged, to study specific topics related to the PhD project.</p>
<p>Financial support: Tutors' departmental research funds</p>
<p>Tutors' publications (max 3) Francesca Boero F., Zappa E., Monroy F, Mariotti M., 2023 - Studies for a sustainable management of <i>Scyphophorus acupunctatus</i> (Coleoptera, Dryophthoridae) at the Hanbury Botanic Gardens. Bulletin of Environmental and Life Sciences, 5: 12-29. Doi: 10.15167/2612-2960/BELS2023.5.1.2158 Mariotti M., Zappa E., 2022 - Remarks on the exotic flora of Capo Mortola (Ventimiglia, northern Italy) and its changes over time. Italian Botanist, 14: 1-43. doi: 10.3897/italianbotanist.14.79815</p>