LARA MAISTRELLO (CV updated 15/01/2022)
Researcher unique identifier: **ORCID ID: 0000-0002-2996-8993**
Current position (as of 1/10/2019):
Associate Professor in General and Applied Entomology, qualified as Full professor
Since she was hired (2002), she is/has always been the sole representative for this sector at the University of Modena and Reggio Emilia (UNIMORE)

OVERVIEW

Lara Maistrello is Associate Professor in General and Applied Entomology with qualification as Full Professor at the Department of Life Sciences and Interdepartmental Center BIOGEST-SITEIA of UNIMORE, where she is the only teacher of the Entomology courses. Graduated with honors in Biological Sciences (University of Parma, 1992), holds a PhD in Animal Biology (University of Bologna, 1996). Post-Doctoral Researcher promoted to Research Assistant Professor at LSU (Louisiana State University), Dept. Entomology (Baton Rouge, Louisiana) (1999-2002). Hired by UNIMORE as a researcher since 2002, promoted to Associate Professor in 2019.

Currently, research activity of Prof Maistrello is focused on sustainability in the agri-food sector both in terms of use of insects as resources in a circular economy perspective and on environmentally friendly management of pests, especially biocontrol and behavior-based strategies.

Prof. Maistrello is responsible for the Applied Entomology Laboratory, with adequate skills and equipment to carry out applied research projects on: use of insects as useful resources in a circular economy perspective for the valorization of organic substrates of various types; innovative solutions for the sustainable management of pests in the agro-food supply chains, manufactured and stored products. Massive rearing of insects (*Hermetia illucens, Tenebrio molitor* and other stored product pests, parasitoids) is carried out in the laboratory for targeted experimental tests.

Coordinator and principal investigator of projects focused on the biology, biocontrol and sustainable management of invasive insects, in particular the brown marmorated stink bug *Halyomorpha halys* and on projects on the use of the black soldier fly *Hermetia illucens* for the valorization of organic waste/side streams obtaining compounds useful in agriculture and in the feed/food industry.

Appointed member of the “National scientific-technical coordination table for the biological control of the brown marmorated stink bug *Halyomorpha halys*” by the Italian Ministry of Agriculture Food and Forestry since November 2019. She has obtained important assignments of scientific-technical consultancy, also at an international level, on issues related to pests of foodstuffs, wood and other goods. She carries out intense scientific and technical dissemination and dissemination activities in Italy and abroad on the results of the research carried out and on topical issues relating to insects.

SCIENTIFIC PRODUCTION: 131 articles, 80 of which on ISI journals; 9 book chapters (2 in Scopus); 2 scientific reviews of books, 136 full papers/abstracts in national/international conference proceedings, H-index= 24, N citations= 1529 (Scopus). Co-inventor in 3 patents.

EDUCATION AND QUALIFICATIONS

1992-Laurea (BSc/Msc Equivalent) with honours (110 e lode) in Biological Sciences, Un. Parma
1994-State Professional Exam for Biologists
1996-PhD in Animal Biology, Un. Bologna
2002-Specialization course on Sustainable Development and Management of Agricultural and Environmental Systems, Un. Bologna

2008-International Short Course in Agroecology, IPM and Sustainable Agriculture, Michigan State Un. (MI, USA)
2014-Qualification as Associate Professor, obtained by MIUR
2017-Qualification as Full Professor, obtained by MIUR
2020-Successfully attended the Language Course "Lecturing in English 1 - 2020" at the Language Centre of the UNIVERSITY OF MODENA AND REGGIO EMILIA. Course duration: 28 hours. Course level: Advanced English course for English Medium Instruction (EMI)
2021-Successfully attended the "Summer School Insects as Food & Feed" online 21-6-2021 - 2-7-2021, Wageningen University and Research

PROFESSIONAL EXPERIENCES

1997-99 Post-doctoral Researcher, Dept. of Biology, Un. Ferrara. Research on IGRs effects on termite development /behaviour.
1999-2001 Post-doctoral Researcher, Dept. Entomology, Louisiana State Un. - Agricultural Center (Baton Rouge, LA, USA). Research on botanicals efficacy on *Coptotermes formosanus*.
2001-02 Research Assistant Professor, Dept. Entomology, LSU – AgCenter. Research on evaluation of botanicals in urban pest control strategies.
2002-03 Holder of a "Spinner" fellowship at UNIMORE, technology transfer project on evaluation of botanicals on phytophagous insects
2002- 2019: permanent position as Researcher in General and Applied Entomology, UNIMORE, Dept. Life Sciences
2009, 2011 Appointed by AKTC (Aga Khan Trust for Culture) as a scientific-technical specialist consultant on xylophagous insects in the restoration projects of: Djingarey Ber Mosque, Timbuktu (Mali, Africa), report delivered to the Ministry of Culture of Mali; historical buildings in Damascus (Siria)
1/10/2019: permanent position as Associate Professor in General and Applied Entomology, UNIMORE, Dept. Life Sciences, centre BIOGEST-SITEIA
18/11/2019: Appointed member of the "National scientific-technical coordination table for the brown marmorated stink bug" by the Italian Ministry of Agriculture Food and Forestry

RESEARCH INTERESTS

•Biology and sustainable management of invasive alien insects:
-*Halyomorpha halys*: first to discover its occurrence in Italy, she tracked its spread in the country and obtained the actual distribution map also by means of a crowdsourcing survey, and the genetic characterization of invading populations. Performed life table/overwintering biology studies, laboratory and field trials for evaluation of native antagonists potential for biocontrol; behavioural studies on physical-chemical attractants/repellents and vibrational communication for the implementation of multimodal trapping devices, studies on sustainable management strategies based on behavioural manipulation, evaluations on the biocontrol potential of exotic parasitoids.
-*Drosophila suzukii*: field monitoring/trap improvement and evaluations (2014-2016).
-*Dryocosmus kuriphilus*: mass rearing of the parasitoid *Torymus sinensis,* contributed to 46% of all field releases in the biological control program of Emilia Romagna region (2011-15).
•Valorization of organic substrates using insects, in a circular economy standpoint: use of the black soldier fly *Hermetia illucens* for the valorization of byproducts and waste of the agro-food chains to obtain compounds useful in agriculture and in the feed/food industry.
•Integrated pest management strategies (botanicals, entomopathogens, physical methods) in agroecosystems (insects/nematodes in vineyards/horticultural crops) and urban environments (stored products, wood pests).
•Xylophagous insects in vineyards (termites, wood-boring beetles): survey on damage and interactions with wood pathogens.

•Honeybee colonies wellness: role of pathogens/viruses, importance of amino-acids, use of natural compounds against *Nosema* spp.

FUNDED COMPETITIVE PROJECTS

Scientific coordinator/Principal investigator of the following projects:

2021-2023 FLIES4FEED (ID: 5201624) - New animal feed from insects by enhancing agro-industrial waste and biogas plants. Funded by the Emilia Romagna Region, PSR 2014-2020 Op. 16.1.01-GO PEI-Agri - FA 3A, coordinated by CRPA. Role: scientific coordinator.

2021-2023 HALY.ID - ICT-AGRI-FOOD COFUND 2019 (Project ID 40606) - HALYomorpha halys IDentification: Innovative ICT tools for targeted monitoring and sustainable management of the brown marmorated stink bug and other pests. Funded by MIPAAF. Role: PI of the unit UNIMORE.

2020-2022 HALY.BIO (ID 5159269) - Operational investigations for the implementation of biological control of the invasive *Halyomorpha halys* in Emilia Romagna. Funded by Regione Emilia Romagna, PSR 2014-2020 Op. 16.1.01-GO PEI-Agri - FA 4B.

2019-2021 "FLIES4VALUE": Insects for the bioconversion of agri-food by-products in feed and high added value products. Funded by the Region of Emilia Romagna in the POR-FESR 2014-2020, AXIS 1 Research and Innovation. Role: PI and scientific coordinator.

2017-2019 "BIOECO-FLIES": Valorization of by-products of vegetable supply chains through insects: new solutions for food, agronomic and energy uses. Funded by the Region of Emilia Romagna in the PSR 2014-2020, Op. 01/16/01 - Agri-GO PEI - FA 5C. Role: scientific coordinator.

2016-2018 "VALORIBIO": Valorization of organic waste by means of insects to obtain biomaterials for agricultural uses. Funded by the Region of Emilia Romagna in the POR-FESR 2014-2020, AXIS 1 Research and Innovation. Role: PI and scientific coordinator.

2016-2019 "HALYS": Monitoring techniques and innovative strategies for the control of *Halyomorpha halys* (brown marmorated stink bug). Funded by the Emilia Romagna under the PSR 2014-2020 Op. 01/16/01 - Agri-GO PEI - FA 4B. Role: scientific coordinator.

2014-16 Innovative tools and protocols for monitoring and sustainable control of the alien stink bug *Halyomorpha halys*, a new phytosanitary threat, and of other harmful heteropterans for the fruit crops of the territory of Modena. Funded by Fond. Cassa di Risparmio di Modena. Role: PI.

2014-16 Improvement of traps as monitoring tools and evaluation of innovative strategies for the control of *Drosophila suzukii*, a new pest of small fruits. Funded by Fond. Cassa di Risparmio di Vignola. Role: PI.

2006-2008 Evaluation of repellents for insect resistant packaging. Funded by Fondazione Manodori, Reggio Emilia. Role: PI.

Participant to the following projects:

2021-2022 "GREW- (*Garden from Recycling & Wastes*) New integrated system for house and vertical gardens cultures by synergic application of innovative fertilizer and led lighting: a circular economy strategy giving to waste materials a new second life": FAR UNIMORE Interdisciplinary project. P.I. M.L. Barbieri.

2018-2022 "SCALIBUR": Horizon 2020 Call: H2020-SFS-2018-2020, Topic: CE-SFS-25-2018; Type of action: IA on a WP related to the use of insects as bioconverters of organic substrates for the production of proteins. P.I. A. Antonelli

2015-2017 "Study for the valorization of organic waste using insects for the obtainment of bioplastics": FAR UNIMORE Interdisciplinary project. P.I. A. Antonelli

OTHER FUNDED PROJECTS

2021-2022 contract with BIOECOLOGY srl for “"Innovative strategies for the sustainable control of pest species in livestock farms"

2020-2021 contract with BIOECOLOGY srl for “"Innovative strategies for the sustainable control of pest species in livestock farms and in the agri-food sector"

2020 Contract with Consorzio Fitosanitario di Modena for “Specialized technical service for the mass supply of parasitoids of the genus *Trissolcus*”

2019 Contract with Consorzio Fitosanitario di Modena to perform research on "Investigation on the trend of natural populations of *Halyomorpha halys* natural antagonists and verification in the field on the effectiveness of inundative releases of *Anastatus bifasciatus* in Emilia for the control of the same invasive pest".

2019-2020 Contract with Zespri Group Limited on “Evaluating the timing and type of feeding damage by BMSB on kiwifruit”

2019 Contract with NEW HORIZONT CANARY BUGS SL on ““Industrial rearing of Black Soldier Fly and other insects for feed/food purposes”

2018 Contract with Consorzio Fitosanitario di Modena to perform research on “Evaluation for augmentative biocontrol of *Halyomorpha halys* using the native egg-parasitoid species *Anastatus bifasciatus*: laboratory mass rearing and field release”

2013-16 Five projects on IPM in cereal storage facilities and insect resistant packaging, funded by Barilla Spa

2011-15 Biological control of the chinese chestnut wasp *Dryocosmus kuriphilus* in Emilia Romagna: mass rearing system management for the field release of the parasitoid *Torymus sinensis.* Funded by Plant Protection Services of Modena e Reggio Emilia

2012-14 NANOSOLWOOD: innovative wood treatments against biotic deterioration. Funded by Renner Spa

2006-2011 Evaluation of botanicals for control of nematode and insect pests in horticultural crops. Two projects funded by Agrostar srl

ACADEMIC AND SCIENTIFIC ACTIVITY

•Member of the councils of: Dept. of Life Sciences; PhD School in Agri-Food Sciences, Technologies & Bio-Technologies (STEBA); member of the scientific committee of Inter-Department Centre BIOGEST-SITEIA

•Promoter of agreements for academic/cultural/scientific-technological collaboration between UNIMORE and: Un. Seville (Spain); Un. Huddersfield (UK)

•Member of PhD exams Committee (Un. Seville: 2007, 2018; Un. Bologna: 2009, Un. Florence: 2018)

•**Expert evaluator for**: Agriculture and Agri-Food Canada Science and Technology Branch, ESF (European Science Foundation – Science Connect), MIUR (PRIN projects) - Registered to REPRISE, New Zealand Ministry for Primary Industries, NKFIH (Hungary).

•**Academic Editor for the journal INSECTS, Topical collection "Biocontrol and Behavioral Approaches to Manage Invasive Insects",** https://www.mdpi.com/journal/insects/special_issues/Invasive_Insects

•**Peer-reviewer for**: African Journal of Agricultural Research, Agricultural and Forest Entomology, Apidologie, Agronomy, Animals, Behavioural Processes, Biocontrol, Biodiversity Data Journal, Biological Control, Biological Invasions, Biosystems, British Microbiology Research Journal, Bulletin of Insectology, Crop Protection, Crop Science, Entomologia Experimentalis et Applicata, Environmentla Pollution, European Journal of Entomology, Frontiers Ecology And Evolution, Future Foods, Helminthologia, Insect Science, Insects, International Journal of Insect Science, International Journal of Pest Management, International Journal of Tropical Insect Science, Journal of Apicultural Research, Journal of Ethology, Jou
rnal of Insect Behaviour, Journal of Insect Conservation, Journal of Invertebrate Pathology, Journal of Plant Protection Research, Journal of Pest Science, Journal of Insect Physiology, Journal of Testing and Evaluation, Pakistan Journal of Zoology, Peer J., Pest Management Science, Plant Protection Science, Phytoparasitica, PLOS One, Research in Veterinary Science, Vie et Milieu, Zoomorphology

ACADEMIC TEACHING/TUTORING ACTIVITY

•At UNIMORE she is/has always been the only holder of all courses related to general/applied entomology, including Plant Protection from Insect Pests. Presently teaches: "Entomology" (module of the course Entomology and Plant Pathology) (6CFU); "Sustainable approaches for integrated management of insect pests" (6CFU).

•At UNIPR she teaches the course "Animal pests of stored agrifood products and their management" for the international Master course "Food Safety and Food Risk Management" (6CFU).

• Insetti e sostenibilità agro-alimentare: sfide e opportunità" (2 ore)(0,25 CFU) per "Competenze trasversali per la sostenibilità" del Dipartimento di DIEF

•Lecturer for STEBA PhD School, topic: a) Management of Invasive Alien Species (every year since 2014); b) Insect farming: sustainable approaches for biowaste valorization and the production of feed and food(since 2021)

•Lecturer for Biology PhD School of the University of Seville (Spain), topic: "The invasive *Halyomorpha halys*, an emerging threat for agricultural crops in Europe. An overview on its biology, ecology, spread patterns, and innovative IPM approaches" (18/11/17)

•Sustainable control of insects in agro-ecosystems (6 hours, in Spanish) at Univ. Seville, Erasmus Teaching Mobility Program, 2009

•Tutor of the research activity of 9 PhD students (one of which in progress); supervisor of the abroad experience for a PhD Student from Un. Cluj-Napoca (Romania); tutor of the Master's thesis of a student from IAMB (Mediterranean Agronomic Institute of Bari); supervisor of 51 undergrad./17 graduate students' thesis.

Recent PHD STUDENTS

STEBA XXXVI (2020-2023), "Innovative strategies for the sustainable management of insect pests in agro-food industries and livestock farms", Sara D'Arco

STEBA XXXIII (2017-2020), "Investigations on biology and behavior of *Halyomorpha halys* (Heteroptera: Pentatomidae) aimed at its sustainable management in agro-ecosystems", Giacomo Bulgarini

STEBA XXX cycle (2015-2018), ""Sustainable management of invasive insects: biological control and implementation of monitoring systems for the Brown Marmorated Stink Bug *Halyomorpha halys*, a dangerous fruit pest recently introduced in Northern Italy", Elena Costi

ORGANIZATION OF SCIENTIFIC EVENTS

•Organizer/lecturer: "*Halyomorpha halys*: from threat to concrete problem. A very difficult 2015 and an uncertain future". Modena, 6/2/2016

•Organizer/lecturer: "Workshop: recent research trends on *H. halys*", Reggio Emilia, UNIMORE, 5/2/2016

• Scientific-organizing committee "XV CONVEGNO NAZIONALE A.I.S.A.S.P", Reggio Emilia, 18-19/9/2014

•Organizer/lecturer: "Theoretical-Practical Course of Forensic Entomology", 2^{nd}-4^{th} editions, run by GIEF. Reggio Emilia, 27-29/1/2011; 18-21/9/2013

•Organizing committee of "5th EURO-IUSSI". Montecatini Terme (PT), 26-30/8/2012

•Organizing committee of "Evolution in Communication and Neural Processing" Modena, 18-19/11/2010

•Scientific Committee of the exhibition "Darwin: Modena and 200 years of evolution," where she was also lecturer and curator of panels related to eusociality and coevolution. Modena, 14/9/2009–24/1/2010

MEMBERSHIPS

•S.E.I. (Italian Entomological Society) since 2002

• U.Z.I. (Italian Zoological Society) since 2017

•A.I.S.A.S.P. (Italian session of IUSSI: International Union for the Study of Social Insects) since 1992. Secretary during 2010-14, managing board member 2016-2018.

•G.I.E.F. (Italian Group of Forensic Entomology) since 2010

•G.M.S.N.(Gruppo Modenese di Scienze Naturali), managing board member 2013-2019
•E.S.A. (Entomological Society of America) 1999-2002
•I.S.C.E. (International Society of Chemical Ecology) 2000-2002

KNOWN LANGUAGES
Italian: mother tongue; English: excellent (written/spoken); Spanish: fluent (written/spoken)