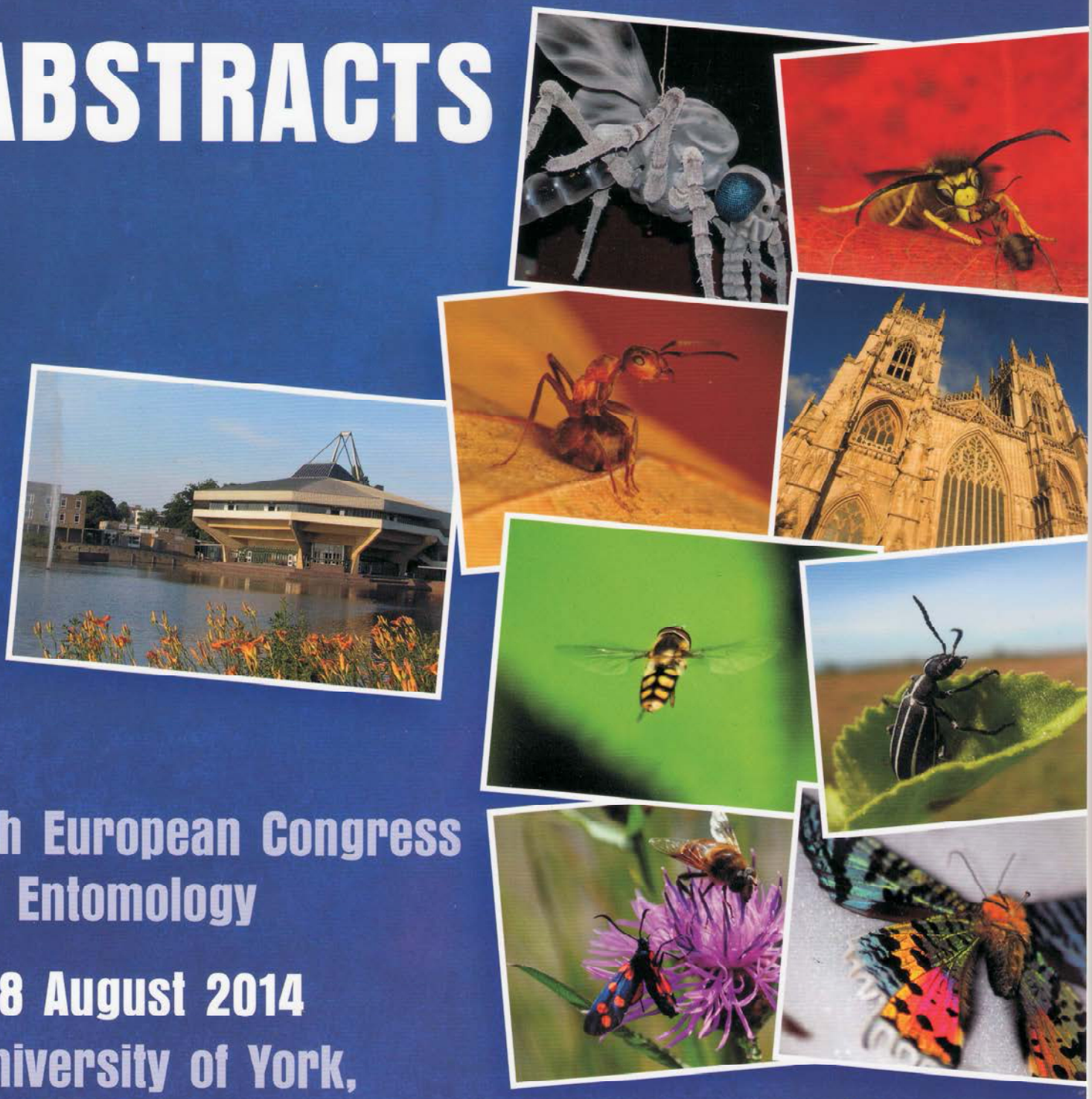
ECE 2014

ABSTRACTS



Xth European Congress of Entomology

3-8 August 2014

University of York, York, UK

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Xth European Congress of Entomology
ECE 2014
York, United Kingdom
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these pahogens on oak decline processes, but there is no data about the feedback influence on gypsy moth development. Based upon this, we tested effect of red oak leaves chlorosis, induced by *Phytophtora* spp., on gypsy moth preference, nutritional and growth indices. We selected four pairs of red oak trees (healthy *vs.* tree with symptoms of chlorosis) under the same ecological condition. After the soil and root sampling and isolation tests, using baiting method with a young oak and cherry laurel leaves, presence of *Phytophthora plurivora* and *P. gonapodyides* were confirmed. After two choice tests, we found that gypsy moth 2nd instar prefer more chlorotic than healthy red oak leaves. Although, gypsy moth 4th instar had better nutritional and growth indices after feeding on leaves with symptoms of chlorosis. It looks like, that oak decline processes acting like a spiral of death. Once defoliation triggers the oak decline process, it accelerates from cycle to cycle.

P219 Nutritional indices and digestive enzyme activities of gypsy moth larvae switched between turkey oak and hungarian oak [MONDAY]

Slobodan Milanović[1, 3], Milena Janković-Tomanić[2], Jelica Lazarević[2]
[1]Department of Forest Protection and Wildlife Management, Faculty of Forestry and Wood Technology-Mendel University in Brno, Czech Republic; [2]Department of Insect Physiology and Biochemistry, Institute for Biological Research, University of Belgrade, Republic of Serbia; [3]Department of Forest Protection, Faculty of Forestry University of Belgrade, Republic of Serbia
[slobodan.milanovic@mendelu.cz]

Larvae of a generalist species, the gypsy moth (*Lymantria dispar*), frequently encounter diet heterogeneity due to passive wind-born dispersal of 1st instars as well as host plant switching of advanced instars in mixed stands and during outbreak. Such spatial and temporal variation in nutritional environment favors their exquisite behavioral and physiological plasticity. We studied the effects of switching between Turkey (*Quercus cerris*) and Hungarian oak (*Q. frainetto*) on growth, nutritional indices and activities of protease and amylase in gypsy moth larvae. In Serbia, these oak species are often found in mixed stands where outbreaks start. Hungarian oak is less suitable host plant due to lower water and protein content. Switching from turkey to hungarian oak led to prolonged duration of 4th instar, decreased relative growth rate, relative consumption rate and efficiency of conversion of ingested food as well as increased protease and amylase activity. Values of examined traits in gypsy moth larvae switched from hungarian to turkey oak did not differ from values obtained in larvae continuously reared on turkey oak. Studying physiological plasticity of the gypsy moth in response to vaiation in suitable hosts are important for understanding population dynamics of this invasive species.

P220 Task- and context-related plasticity of circadian activity in the ant *Camponotus rufipes* [THURSDAY]

Stephanie Mildner, Flavio Roces
Department of Behavioral Physiology and Sociobiology, Biocenter, University of Würzburg, Germany
[steffi.mueller@uni-wuerzburg.de]

Ant colonies show complex division of labor, with various tasks performed by distinct worker castes. Here, the temporal coordination among workers and their environment is essential for adaptive collective behavior and colony success. To identify the implications of temporal coordination on daily activity patterns, the circadian activity of both forager and nurse workers of *Camponotus rufipes* was studied in the social context and in isolated ants. Long-term video recordings of individual tagged ants in subcolonies consisting of workers and brood under a light-dark-cycle and daily pulses of food-availability revealed diverse activity profiles under these two zeitgebers. Nurse workers showed no circadian rhythmicity and performed their task all around the clock on a high overall activity level, likely to meet the needs of the brood. In contrast, foragers showed lower activity levels due to their rhythmic foraging behavior, which was caste-specific and synchronized with the food-availability. In isolation, locomotor activity recordings under the same light-dark-cycle showed comparable circadian patterns for both castes. Most ants synchronized their activity strongly with the light-dark cycle and exhibited nocturnality. These results show that endogenous activity patterns can be inhibited in the social context and that circadian behavior is flexibly adapted according to task allocation

P221 Mother knows best: trans-generational immune priming in insects [TUESDAY]

Charlotte Miller
School of Biological Sciences, Queen's University Belfast, UK
[Cmiller08@qub.ac.uk]

Juvenile organisms are highly vulnerable to pathogen attack due to their lack of previous immune experience. However, the offspring of immune challenged mothers show enhanced immunity in many species, including a range of insects. Trans-generational immune priming, as this enhancement of the immune system is called, is suggested to be wide-spread in invertebrate species but is still only mechanistically understood in vertebrates. Research in this area has so far been largely based on the documentation of the phenomenon rather than the isolation of the causal mechanism. I am researching this phenomenon in an obligate carrion-breeding insect, the burying beetle. The distinctive immune environment of the beetle during the larval stage and breeding events places strong selection pressures on the immune capabilities of the species. It presents a highly tractable model for investigating both the insect immune system and functional aspects of the trans-generational immune priming process.

P222 Molecular identification of bark beetles and their associated fungi [MONDAY]

Kirsten Miller[1, 2], Alfried Vogler[1, 2]
[1]Department of Life Sciences, Imperial College London UK; [2]Natural History Museum, London, UK
[kirsten.miller09@imperial.ac.uk]

Bark and ambrosia beetles (Curculionidae: Scolytinae and Platypodidae) are becoming increasingly associated with forest health concerns. The movement of timber is a major factor in the establishment of invasive beetles across the globe and the success of bark and ambrosia beetles is partly attributable to their symbiotic associations with fungi. DNA sequencing techniques are increasingly being applied to biodiversity monitoring to quickly survey groups of organisms to gain an understanding of species composition and evolutionary processes. Here we apply phylogenetic species delineation to tropical bark and ambrosia beetles as well as their fungal associates in order to characterise the patterns of association between these organisms. Beetles were collected on Barro Colorado Island in Panama at two levels in the forest canopy. Of the 960 specimens included in the analysis, 45 putative beetle species were identified of which 83% were assigned to a tribe. All putative fungal species were identified to class or below. Levels of host specificity were found to vary dramatically between fungal groups and vertical stratification was found in the beetle community. This study provides a snapshot this community's taxonomic composition and sheds light on the intricate and unknown associations between these groups of organism.

P223 Modelling the impact of farmer decisions on the control of the European corn borer in the landscape [MONDAY]

Alice E Milne[1], James R Bell[2], William Hutchison[3], Frank Van Den Bosch[1], Paul Mitchell[4], David Crowder[5], Stephen Parnell[1], Andy Whitmore[6]
[1]Computational and Systems Biology, Rothamsted Research, UK; [2]Agroecology, Rothamsted Research, UK; [3]Department of Entomology, University of Minnesota, USA; [4]Department of Agricultural and Applied Economics, University of Wisconsin, USA; [5]Department of Entomology, Washington State University, USA; [6]Sustainable Soils and Grassland Systems, Rothamsted Research, UK
[alice.milne@rothamsted.ac.uk]