Pollinator Conservation

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13:30 **1258** Flower-insect interactions and biodiversity in the Eastern Ghats forest, India. **Jacob Solomon Raju Aluri,** Department of Environmental Sciences Andhra University Visakhapatnam

13:45 **1259** IDmyBee, a free, collaborative tool to face the current taxonomic impediment for European wild bees. **Perrard Adrien[1]**, Andrew Polaszek[4], Bertrand Schatz[2], Denis Michez[6], Elie Mario Saliba[5], Jakub Straka[2], Romain Le Divelec[7] and Vladimir Radchenko[3], [1]1) Sorbonne Université, CNRS, INRA, IRD, UPEC, Institut d'écologie et des sciences de l'environnement, IEES Paris, France 2) Université de Paris, IEES, [2]Centre d'Ecologie Fonctionnelle et Evolutive, CNRS, Montpellier, France, [2]Department of Zoology, Faculty of Science, Charles University, Czech Republic, [3]Institute for Evolutionary Ecology of the National Academy of Sciences of Ukraine, Kiev, Ukraine, [4]Natural History Museum, United Kingdom, [5]Sorbonne Université, France, [6]Université de Mons, UMONS, Belgique, Belgium, [7]Agence Française de la Biodiversité, Paris, France

13:50 **1260** Effect of fungicide on pollen foraging by honeybees differs by fungicide type. **Christelle Guedot[1]**, Abby Lois[1] and Benjamin Jaffe[1], [1]University of Wisconsin Madison, United States

14:20 **1261** Honeybee colony strength is affected by spatial scale in fragmented landscapes in eastern Kenya. **Pamela Ochungo[1]**, Elfatih Abdel-Rahman[1], Eliud Muli[3], James Ng'ang'a[1], Ruan Veldtman[2] and Tobias Landmann#[1], [1]1. International Centre of Insect Physiology and Ecology (ICIPE), Kenya, [2]2. Department of Conservation Ecology and Entomology, Stellenbosch University, 3. South African National Biodiver, [3]South Eastern Kenya University/ International centre of insect physiology and ecology, Kenya

14:40 **1262** Counting bees like birds: Roadside bumble bee monitoring in Canada. **Sydney Cannings[1]**, Cory S. Sheffield[2] and Maria Leung[3], [1]Environment and Climate Change Canada, Canadian Wildlife Service, Canada, [2]Royal Saskatchewan Museum, Canada, [3]Consultant, Canada,

14:45 **1263** "beesofcanada.com": A resource of assisting in the conservation of bees in Canada, and the current status of our bees. **Cory S. Sheffield[2]**, Jennifer M. Heron[1], [1]British Columbia Ministry of Environment and Climate Change Strategy, Canada, [2]Royal Saskatchewan Museum, Canada

15:00 **1264** Crop pollination by nocturnal bees. **Ilsabel Alves dos Santos[4]**, Claudia Inês Silva[4], Clemens Schlindwein[2], Cristiane Krug[1], Guaraci Duran Cordeiro[3], Reisla Oliveira[2], Sidnei Mateus[4] and Stefan Dötterl[3], [1]Embrapa, Manaus, Brazil, [2]University of Minas Gerais (UFMG), Brazil, [3]University of Salzburg, Austria, [4]University of São Paulo, Brazil

15:15 **1265** Natural habitat mitigates negative pesticide effects on bee diversity in a traditional Andean crop. **Diana Obregon[1]**, Elena Stashenko[4], Katja Poveda[2] and Olger Guerrero[3], [1]Cornell University, Department of Entomology, Colombia, [2]Entomology Department, Cornell University, Ithaca, New York, United States, [3]Universidad de la Salle, Colombia, [4]Universidad Industrial de Santander, Colombia

15:30 **1266** Discussion time

15:45 **1267** Benefits of insect conservation measures in agricultural areas. **Francisco Javier Peris-Felipo[1]**, Gina Swart[2], Michael Schade[1] and Rudolf Gugger, [1]Syngenta, [2]Syngenta Crop Protection Basel, Switzerland

16:00 **1268** Pollinator conservation by managing leaf resources. **Sinu Palatty**, Central University of Kerala

16:15 **1269** Post-fire trends of pollinators in the Aegean Archipelago, a biodiversity hotspot. **Theodora Petanidou,** University of the Aegean

16:30 **1270** Pollinators and Their Conservation Helps a Hungry Planet. **Amarjit Tanda**

17:15 **1271** Habitat enhancement strategies for conservation and management of pollinators in tree fruit orchards. **Neelendra Joshi[1]**, David Biddinger[2], Edwin Rajotte[2], Sarah Heller[2] and Timothy Leslie[3], [1]University of Arkansas, Dept. of Entomology & Plant Pathology, [2]Department of Entomology, Pennsylvania State University, Fruit Research & Extension Center Center, PA,USA, [3]Department of Biology, Long Island University, New York, USA

17:30 **1272** Where do apple pollinators live? Understanding nest-site selection of solitary ground-nesting bees in UK orchards. **Konstantinos Tsiolis[4]**, Emma Tilston[3], Joseph Burman[1], Michael Garratt[4], Michelle Fountain[2], Naomi Rintoul[1] and Simon Potts[4], [1]Canterbury Christ Church University, [2]NIAB EMR, [3]NIAB EMR / Enviresearch Ltd, [4]University of Reading

Available Abstracts from Symposium on "Pollinator Conservation"

[from the ICE2022 Book of Abstracts]

Flower-insect interactions and biodiversity in the Eastern Ghats forest, India

Authors: Solomon Raju Aluri Jacob, Department of Environmental Sciences Andhra University Visakhapatnam, India

Abstract: Insects visit flowers for their sustenance. They use pollen as protein source and nectar as energy source. The pollen they inevitably lose in going from flower to flower is important to plants for pollination. Different insects have different pollinating abilities depending on the floral density and floral morphological and functional characteristics. The interactions between insects and flowers appear to have led to the evolution of certain traits in them for mutualistic benefits. Insects require food throughout the year. Perennial, annual and ephemeral plants play a vital role in sustaining insects. These plants flower at different times and thus provide food to insects throughout the year. Among different plants, perennials, especially trees are very important to sustain insect diversity. In return, plants receive the benefit of self or cross-pollination. Among the insects, bees, wasps and butterflies were observed on different plant species that flower at different times of the year. The field work coupled with lab work indicated that both generalist and specialist pollination syndromes exist. Certain plants use all available insects for pollination while certain other plants have specialized floral traits that are adapted to particular classes of insects. In the eastern ghats forest, dry season is very crucial for the local insects due to the dearth of forage, this is because a few tree species flower at this time and serve as keystone plant species for the structural and functional integrity of the ecosystem. Further, in the study, some self-incompatible and obligately out-crossing endemic and endangered plant species have been recorded and they are obligately dependent on certain categories of insects for their fruit/seed set. The studies indicated that insect-flower interactions are mostly mutualistic and their relationships are the basis for the continued existence of biodiversity in this forest ecosystem. Therefore, it is imperative to take measures for the conservation and management of pollinator fauna in order to ensure the sustainability of plant taxa and the pollinators dependent on them.

IDmyBee, a free, collaborative tool to face the current taxonomic impediment for European wild bees

Authors: Adrien Perrard[1], Straka Jakub[4], Polaszek Andrew[6], Schatz Bertrand[3], Michez Denis[8], Mario Saliba Elie[7], Le Divelec Romain[2] and Radchenko Vladimir[5], [1]1) Sorbonne Université, CNRS, INRA, IRD, UPEC, Institut d'écologie et des sciences de l'environnement, IEES, Paris, France 2) Université de Paris, IEES, France, [2]Agence Française de la Biodiversité, Paris, France, [3]Centre d'Ecologie Fonctionnelle et Evolutive, CNRS, Montpellier, France, [4]Department of Zoology, Faculty of Science, Charles University, Czech Republic, [5]Institute for Evolutionary Ecology of the National Academy of Sciences of Ukraine, Kiev, Ukraine., Ukraine, [6]Natural History Museum, United Kingdom, [7]Sorbonne Université, France, [8]Université de Mons, UMONS, Belgique, Belgium

Abstract: There are more than 2000 wild bee species recorded in Europe, many of which require an expert's eye for identification due to the lack of proper identification keys. In many parts of Europe, studies and monitoring projects about wild bees rely therefore on a handful of taxonomists to identify the specimens. However, in the current state of low funding for taxonomic work, wild bee taxonomists cannot answer the high demand for bee identification, clarify taxonomic problems, educate a new generation of taxonomists, develop clear identification tools and keep them up to date, all at the same time. As a result, many pollination scientists focus on a few species, or work at a coarse taxonomic scale, which leads to under-exploitation of available pollinator diversity data. The project IDmyBee, which started in 2019, aims at developing collaborative identification tools to facilitate wild bee identification, to promote education about wild bee diversity and to centralize our knowledge on European wild bee taxonomy. Using the online platform Xper3, we are developing a set of identification tools that act as biodiversity database for the different bee genera and species. These tools have several advantages over the current identification keys: they are available freely, online, so that scientists and conservation actors can easily access this knowledge. They can be built collaboratively, so that the tedious work of key creation and improvement can be shared among taxonomists and with other actors depending on their availability. These tools can be easily updated to follow the changes in the taxonomy, so they offer an up to date vision of wild bee diversity. They are based on a matrix of characters instead of the classical dichotomic key, so they are more versatile for the user. Finally, they are not limited in terms of space or illustration. Illustrations are crucial since access to reference collections is time-consuming and difficult to many people. Despite these advantages, these tools are not aimed at replacing the taxonomic expertise. They will help identify which species require an expert's help and which can be identify by non-specialists. They will also help taxonomists to build and to keep a clear taxonomic framework that can be used by the different environment actors interested in wild bees. In the end, this project should stimulate the taxonomic work on wild bees by reducing the workload of taxonomists due to specimen identification and by providing them with a way to highlight their work through the publications linked to these tools. Once in place, this knowledge database could be linked to other identification methods such as barcoding or image analysis to facilitate wild bee identification even further.

Effect of fungicide on pollen foraging by honeybees differs by fungicide type

Authors: Guedot Christelle[2], Lois Abby[1] and Jaffe Benjamin[1], [2]University of Wisconsin Madison, United States, [1]University of Wisconsin Madison, United States

Abstract: Honeybees (Apis mellifera Linnaeus) (Hymenoptera: Apidae) play a major role in the pollination of cranberry (Vaccinium macrocarpon; Ericaceae). However, fungicide applications during cranberry bloom may affect bees foraging behavior. This research reports the amount of cranberry and noncranberry pollen brought back to hives immediately before and after two types of fungicide applications. The amount of cranberry pollen decreased while the amount of noncranberry pollen increased following a fungicide application. However, this relationship differed depending on the type of fungicide applied. Understanding how different fungicides specifically impact bee behavior is essential to minimizing bee exposure to potentially harmful chemicals.

Honeybee colony strength is affected by spatial scale in fragmented landscapes in eastern Kenya

Authors: Ochungo Pamela[1], Abdel-Rahman Elfatih[2], Muli Eliud[6], Ng'ang'a James[4], Veldtman Ruan[5] and Landmann Tobias[3], [1]1. International Centre of Insect Physiology and Ecology (ICIPE), Kenya 2. Department of Conservation Ecology and Entomology, Stellenbosch, [2]1. International Centre of Insect Physiology and Ecology (ICIPE), Kenya 4. Department of Agronomy, Faculty of Agriculture, University of K, [3]1. International Centre of Insect Physiology and Ecology (ICIPE), 5. Remote Sensing Solutions (RSS) GmBH, Baierbru, [4]1. International Centre of Insect Physiology and Ecology (ICIPE), Kenya, [5]2. Department of Conservation Ecology and Entomology, Stellenbosch University, South Africa 3. South African National Biodiver, [6]South Eastern Kenya University/International centre of insect physiology and ecology, Kenya

Abstract: Landscape fragmentation at multiple scales and habitat loss has a direct effect on species persistence, productivity and survival. Little is known about the effect of the surrounding landscape structure on honeybee colony performance in Kenya. Here we focus on how patch size, shape, connectivity, composition and configuration affect honeybee (Apis Mellifera) colony strength characteristics in a semi-arid agro-ecological landscape in eastern Kenya. The research was done within 6 study sites of varying degrees of degradation, during the period from 2017 to 2018; mapped using high resolution fused bi-temporal Sentinel-1A and Sentinel-2A satellite systems with an optimized random forest algorithm. The influence of the surrounding landscape matrix was constrained to spatial scales with a radius of up to 3km around the apiary to mimic average foraging distances of honeybees. The results of linear mixed effects models showed that adult honeybee population, amount of pollen and amount of brood increased with landscape homogeneity comprised of semi-natural vegetation at short distances from the apiary (500m), while simpler patch geometries at 1km radius from the apiary also had a similar effect on the same hive parameters. Amount of honey increased during the long rainy season that occurs in May, whereas during the driest month of the year (January), pollen amounts largely decreased, demonstrating that seasonality had a role to play for honey and pollen production. There were hardly any eggs in January, in contrast to May which had a large increment in the number of eggs. In contrast to expectations, honeybees in moderately degraded landscapes demonstrated the most consistently strong colonies throughout the study period, perhaps due the heterogeneity of the landscape, therefore availing forage from grasslands, croplands, weeds as well as natural woody vegetation. Colonies in the least degraded areas exhibited the highest rate of absconding, probably due to the presence of large hive beetles which were found in large numbers in the hives. Our results suggest that semi-natural landscape homogeneity, as well as proportion of croplands were most influential at short distances from the apiary (<= 1km), while complexity of patch geometries was most influential at longer distances from the apiary (2km). These results have important implications on hive placement and location for optimal hive productivity as well as pest control in least degraded areas for improved honeybee colony strength.

Counting bees like birds: Roadside bumble bee monitoring in Canada

Authors: Cannings Sydney[2], S. Sheffield Cory[3], Leung Maria[1], [1]Consultant, Canada, [2]Environment and Climate Change Canada, Canadian Wildlife Service, Canada, [3]Royal Saskatchewan Museum, Canada

Abstract: A number of bumble bee species are known to have declined dramatically, but sparse monitoring data has made it difficult to assess the magnitude of these declines across the broad ranges of some of these species in North America. Extensive, simple and effective monitoring programs are needed across the continent to establish range-wide trends. In this study we sampled bumble bees with hand-netting along roadsides in northwestern Canada, using established breeding bird survey routes as a basis of our effort. Within each 36-km transect, bees were sampled for ten minutes at each of ten sites. Early results show that species that have declined in southern Canada and the United States (e.g. Bombus bohemicus, B. occidentalis, and B. suckleyi) are still present in the northwest, and probably at historical densities.

“beesofcanada.com”: A resource of assisting in the conservation of bees in Canada, and the current status of our bees

Authors: Sheffield Cory S.[2] and Heron Jennifer M.[1], [1]British Columbia Ministry of Environment and Climate Change Strategy, Canada, [2]Royal Saskatchewan Museum, Canada

Abstract: In Canada, species at risk are assessed using two methods: 1) broad assessments for all species of a given taxa (e.g., all bees) at the national scale via “Wild Species: the General Status of Species in Canada” (Wild Species), and 2) at the individual species level via assessments done through the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Wild Species assessments are done every five years using NatureServe methodologies, and assessments include species that are not at risk as well as those considered potentially at risk. COSEWIC assessments for individual species use International Union for the Conservation of Nature (IUCN) Red List procedures and are only done on select candidate species. However, both methods require species data, and for the ca 900 bee species in Canada, such data is not readily available. The website “beesofcanada.com” was developed to provide users with an easy to use resource for all things bees in Canada, including a filterable species list generator for each jurisdiction, a complete catalogue with synonymies and type information, summaries of ecological information, and detailed point maps for each species. Though the website is currently being populated with data, information was recently used to assess bees for Wild Species; the results of this assessment will also be summarized.

Crop pollination by nocturnal bees

Authors: Alves dos Santos Isabel[4], Inês Silva Claudia[4], Schlindwein Clemens[2], Krug Cristiane[1], Duran Cordeiro Guaraci[3], Oliveira Reisla[2], Mateus Sidnei[4] and Dötterl Stefan[3], [1]Embrapa, Manaus, Brazil, [2]University of Minas Gerais (UFMG), Brazil, [3]University of Salzburg, Austria, [4]University of São Paulo, Brazil

Abstract: Most bees are active during the day. However, approximately 1% of the bee species are nocturnal and forage in search for flowers during the low light intensities of the night, between sunset and sunrise. They account for about 250 species and are distributed among the families: Andrenidae, Apidae, Colletidae and Halictidae. We evaluate the role of nocturnal bees in the pollination of “cambuci”, Campomanesia phaea, Myrtaceae, and “guarana”, Paullinia cupana, Sapindaceae, both economically highly important plants of the Brazilian Atlantic Rainforest and Amazon, respectively. Furthermore we collected floral volatile from the host plants using dynamic headspace method and tested if these compounds were capable of attracting nocturnal bees in the field. Synthetic scent mixtures that contained various of the identified floral scent components, successfully attracted nocturnal bee pollinators. Our data show that cambuci and guarana attract their nocturnal bees by strong floral scents and suggest that the chemical communication between these plant and their pollinators is a key step in crop production of these economically important plant species.

Natural habitat mitigates negative pesticide effects on bee diversity in a traditional Andean crop

Authors: Poveda Katja[2], Obregon Diana[1], Stashenko Elena[4] and Guerrero Olger[3], [1]Cornell University, Department of Entomology, Colombia, United States, [2]Entomology Department, Cornell University, Ithaca, New York, United States, [3]Universidad de la Salle, Colombia, [4]Universidad Industrial de Santander, Colombia

Abstract: Wild bee communities provide key pollination services to achieve optimum crop yields. There is evidence that the loss of natural habitat and pesticides are two of the main factors contributing to bee declines, however, the interaction of these two stressors has not been much explored. Solanum quitoense, known as “lulo”, is an Andean fruit used for fresh consumption. Despite the economic importance of this crop for local communities, there is very little information about its pollinator dependency and the bee community-associated. In this study made in the Colombian Andes, we characterized the flower visitors and the change in abundance and richness of bees visiting lulo crops in ten farms that differed in landscape composition and pesticide use. In every farm, we calculated the landcover proportions (natural habitat, pastures, and agriculture) at 500m around the center of every crop field. We collected anthers from ten different plants in every farm to test with UHPLC for nine pesticide molecules commonly used in the area (Methomyl, Abamectin, Bifenthrin, Imidacloprid, Profenofos, Lufenuron, Cymoxanil, Difenoconazole, and Propamocarb). Bees were sampled in three events during the dry season with two observers walking for 30 minutes during warm and sunny days from 9:00 to 16:00h stopping and recording the identity and the number of bees observed visiting the flowers. We also estimated the contribution of pollinators to fruit production (Fruit set, fruit weight, and fruit diameter) in an exclusion experiment bagging inflorescences in 20 plants per farm. We recorded 650 visits from 16 bee species in 6 tribes. Tetragonisca angustula and Paratrigona opaca were two of the most frequent visitors. We found a reduction of 51% in fruit set when visitors were excluded, showing a high pollinator dependency. We also found a 39% decrease in fruit weight and 25% decrease in fruit diameter without bees demonstrating their contributions to crop yield. As the pasture area increased, bee Shannon diversity and richness decreased. We found 5 out of the 9 molecules tested in anthers. Propamocarb was found in 100% of the farms ranging from 1.3 to 399.5 ug/kg and imidacloprid in 80% of the farms ranging from 0.6 to 13063 ug/kg. We found that imidacloprid concentration in the anthers was negatively associated with bee diversity and richness. There was a significant interaction of natural habitat area and imidacloprid on bee richness and bee Shannon diversity index, suggesting that the negative effects of imidacloprid on bee diversity are attenuated by the increment in natural habitat. Our study provides evidence that landscape simplification and pesticides, in particular, imidacloprid, are threats to the bee community in lulo crops. However, the interactive effects between the proportion of natural habitat and imidacloprid concentrations showed that complex landscapes can help to mitigate the pesticide negative effects.

Benefits of insect conservation measures in agricultural areas

Authors: Peris-Felipo Francisco Javier[2], Schade Michael[1], Gugger Rudolf and Swart Gina[3], [1]Syngenta, [2]Syngenta Crop Protection, [3]Syngenta Crop Protection Basel, Switzerland

Abstract: Land-use changes in the 1950–1970's notably impacted modern intensive agricultural practices, resulting in a substitution of heterogeneous agricultural landscapes by homogeneous ones. Land consolidation led to the elimination of edges and other ecologically valuable structural elements that provided floral resources and nesting sites.

Habitat loss triggered critical changes in the insect communities. Within beneficial insects, pollinators, mainly wild bees, have been severely affected and suffered the highest decline, reaching up to 50%. Reviews carried out demonstrate that habitat loss, invasive species, parasites and diseases, non-sustainable use of pesticides, and climate change explain the reduction of insect abundance and diversity.

Here we present LIVINGRO™, a collaboration between Syngenta and nine universities. This agro-ecological program aims to build substantial and comprehensive scientific data from real-world field trials. The data will serve to test our hypothesis that the use of modern agricultural technology and best agricultural practices, together with ecological compensatory measures, can sustainably improve biodiversity and soil health in agricultural landscapes.

LIVINGRO™ examines the performance of crops and natural ecosystems across different geographies, and on a variety of perennial and rotational crops. The researchers will look at all orders of insects, whether they are living above ground or in the soil.

Post-fire trends of pollinators in the Aegean Archipelago, a biodiversity hotspot

Authors: Petanidou Theodora, University of the Aegean

Abstract: Fire is among the most important disturbances in Mediterranean ecosystems, and frequent enough to be considered as an integral characteristic of this Region and of other Mediterranean-type regions of the world. The increasing inflammability within these systems, as a result of climate change, will boost both the frequency and the severity of fires. In this talk I will present the results of a series of systematic studies carried out in three areas of Greece (two Aegean islands and a mainland) on the effects of wildfires on pollinator diversity, principally bees, considering fire history, fire severity, and post-fire recovery both in the short- and the long-term. The results show that fire history does not affect richness and abundance of bees, but it does shape their community structure, vis-à-vis functional traits (nesting habit, polylecty, body size). Regarding the effect of fire severity, major insect guilds (bees, sawflies, wasps) respond to fire severity at relatively small spatial scales (250-300 m) and in conformity with the Intermediate Disturbance Hypothesis; flies and beetles respond to larger spatial scales, their response being of decreasing type. The entire set of conclusions stemming out from these results constitute a valuable basis for forest management targeting to pollinator conservation.

Pollinators and Their Conservation Helps a Hungry Planet

Authors: Tanda Amarjit, Australia

Abstract: Major crops are mainly dependent upon managed honey bees and wild bee pollinators which are of great significance. Bee pollinated crops being a great part of the bio-diverse system, 4,000 native bees, and offer over US$1.5 billion each year in North America. In the US, the value of wild bees in food production was determined to be over $1.5 billion annually. However, the worth of wild bee pollination in insect cross-pollinated crops may be much more. These great wild players are now in a fast-declining phase or possibly extinct due to human-disturbed habitats. More studies are needed in population biodiversity, bee abundance and protection measures, suitable habitat, nesting sites especially their immediate conservation strategies. As progress is demanded in entomology, honeybees and the wild bee pollinators should be protected from the overuse of pesticides by conserving bee populations for better agricultural production to feed the hungry planet by sustaining global biodiversity. We highlight in this presentation, the various measures, and actions to conserve the wild bees so that they can serve the growers as co-players to managed honey bees in boosting agricultural food production worldwide.

Habitat enhancement strategies for conservation and management of pollinators in tree fruit orchards

Authors: Joshi Neelendra[5], Heller Sarah[4], Leslie Timothy[1], Rajotte Edwin[2] and Biddinger David[3], [5]University of Arkansas, Dept. of Entomology & Plant Pathology, [1]Department of Biology, Long Island University, New York, USA, [2]Department of Entomology, Pennsylvania State University, PA, USA, [3]Entomology, Penn State Fruit Research & Extension Center, Biglerville, PA, USA, [4]Penn State Fruit Research and Extension Center, Biglerville, PA, USA

Abstract: Different species of bees, syrphids, moths and other flower visiting insects provide pollination services and play an important role in production of several types of tree fruit crops. In recent past, decline in pollinators' populations due to multiple interactive factors including lack of floral food resources, nesting habitats, landscape diversity has led researchers to develop viable strategies to conserve their populations in different ecosystems. In multiyear studies, we examined the impact of establishing native floral resource plantings on orchard bee diversity, seasonal occurrence, and community composition in tree fruit production system. We also examined strategies to enhance nesting of tunnel nesting orchard bees and their preferences for different types of artificial nest substrates and different ways to protect them from their natural enemies. Major findings from these studies will be presented and implications of different habitat enhancement strategies for conservation and management of pollinators in tree fruits will be discussed.

Where do apple pollinators live? Understanding nest-site selection of solitary ground-nesting bees in UK orchards

Authors: Tsiolis Konstantinos[4], Fountain Michelle[2], Potts Simon[4], Garratt Michae [4], Tilston Emma[3], Burman Joseph[1] and Rintoul Naomi[1], [1]Canterbury Christ Church University, [2]NIAB EMR, [3]NIAB EMR / Enviresearch Ltd, [4]University of Reading, United Kingdom

Abstract: In the UK, ground nesting bees are the most economically important pollinators of apple crops. However, very little is known about where they nest in orchard landscapes and what their specific habitat preferences are. This presentation will provide novel insights into the habitat preferences of ground-nesting andrenid bees and show how simple management interventions can be used enhance populations several ground-nesting bee species. The findings shared here will underpin more general implications for the sustainable management of a largely overlooked pollinating taxa which have a central role in food security.