

# Conference Session Descriptions

## Wednesday Opening Session

### What's the Buzz? Sustainable Foodsheds of the Past, Present and Future –*Brian Snyder*

Where does your food come from? That's an increasingly common modern catchphrase, but at times throughout history also a very serious question with profound consequences for the community looking for answers. When food is ubiquitous, we easily take it for granted. But when times are tough, tough-minded people find creative and fundamentally similar ways to keep their families fed. What lessons are available for a future on this planet, now shrouded in uncertainty from a shrinking land-base, unpredictable weather, and precarious economic conditions? Here's a hint: bees will be important.

### Dialogue in Bee Time: Lessons Learned from the Bees –*Mark Winston*

There are powerful lessons to be learned from bees, about how we humans can better understand our place in nature, engage the people and events surrounding us with greater focus and clarity, interact more effectively in our relationships and communities, and open ourselves to a deeper understanding of who we are as individuals, communities, and a species. Dr. Winston will talk about his experiences over 30 years of walking into apiaries, and the lessons learned from a life spent among the bees.

### Cooperation and Conflict in Honey Bee Colonies –*Christina Grozinger*

While honey bee colonies are often thought of as harmonious "superorganisms", our studies of queen-worker interactions have revealed a nuanced and sophisticated pheromone communication system that balances cooperation and conflict. Our studies provide novel insights into genomic, physiological, and chemical mechanisms that regulate the social lives of bees.

### What is Common and Unique to Beekeeping in North Carolina –*Don Hopkins*

Beekeeping has a long, strong tradition in North Carolina. Don will share his many years of experience as a North Carolina apiary inspector.

## Wednesday Afternoon

### Making Peace and Places for Bees

### The Value of Good Forage in Keeping Healthy Bees –*Zac Browning*

Unfortunately, we are losing suitable honey bee habitat, at alarming rates.

If our aim is to improve honey bee health and preserve our pollinators, then we must invest in habitat and sustainable farming practices. Conservation programs have shown promise in the past. Farmers, applicators, and land managers must understand the relationship between bees and the agriculture system. Using Best Management Practices (BMPs) on the farm (with both herbicide and pesticide) and dedicating a small amount of land, particularly the fringes or less productive areas of the farm, to habitat only makes good sense and can go a long way toward protecting and promoting the pollinators that we require.

### Conserving Bees in Managed Landscapes –*Doug Tallamy*

Because our managed landscapes are essential parts of the terrestrial ecosystems that sustain humans, it is essential that we keep them in working order. An important component of productive ecosystems is a diverse and abundant community of pollinators. Much has been written about native bees but we have ignored the thousands of species of moth and butterfly pollinators in our landscapes. Tallamy will discuss the important ecological roles of these species, and discuss the plants required to support their populations in our landscapes.

### Honey Corridors in the Appalachians –*Tammy Horn*

Based on ongoing work with surface mine companies, Tammy Horn will discuss how current EPA laws impact pollination contracts with surface mine companies, the importance of establishing three-season blooms, and creating honey corridors. Horn will also discuss the progress and challenges in eastern Kentucky of re-establishing a forest-based beekeeping infrastructure, as the coal industry declines.

### Apiary Services: Supporting Honey bees and Beekeepers –*Chris Harp*

Chris Harp shares experiences from his career, teaching other beekeepers and tending hives on CSAs and private estates. Experienced beekeepers can step into a role that is good for the bees, the beekeeper, and the clients they serve to meet the growing interest in honeybees, and the overall concerns for their health.

## Honey Bee Biology: A Deeper Understanding

### How Honey Bees Live in the Wild –*Tom Seeley*

A honey bee colony living on its own in a tree cavity leads a life that differs markedly from that of a colony residing in a beekeeper's hive. We will compare the lifestyles of feral and managed colonies and consider what this reveals about how to be a better beekeeper.

## Conference Session Descriptions *continued*

### **Bee Brain Gas: How Nitric Oxide Helps Form Odor Memories –Jay Hostler**

The honey bee brain is a remarkable organ, capable of impressive feats of learning with less than a million neurons. The ability to associate a specific flower odor with available nectar is critical for the production of honey. Surprisingly, much of this odor learning is modulated by the the gas nitric oxide, which bee brains produce when they are foraging.

### **Colony Usurpation: Out with YOUR Queen, In with THEIRS –Wyatt Mangum**

Colony usurpation is when a summer swarm enters the hive of an established colony and eliminates the colony's mother queen. The swarm's queen, the usurpation queen, becomes accepted as queen of the hive and begins laying her eggs. See detailed photographs of this behavior from usurpations in Virginia. Prepare yourself for this new way to lose a colony's queen.

### **Nutritional Regulation of Division of Labor and Honey Bee Health –Miguel Corona**

There are important nutritional differences between honey bee workers that are associated with task performance: nurses are fed with pollen and honey, while foragers consume only honey. We found that nutritionally induced changes in the worker's behavioral state have a major effect in the expression of immune genes and virus load. The implications of this finding for winter losses and colony collapse disorder will be discussed.

### **Wednesday Afternoon Symposia-Related Breakouts**

### **In Search of Perfect Bee Pasture: Where Can We Go These Days? –Jeff Pettis & Zac Browning**

As more and more native pasture and conservation land is turned into cropland or houses, the available forage for bees is less. We will discuss ideas on how we can improve bee pasture or find ways to do targeted plantings for pollinators in agricultural settings

### **The Communication Signals in Honey Bee Swarms –Tom Seeley**

We will look at the form and function of the six known signals that the bees in a swarm use to coordinate their behavior: waggle dances, stop signals, worker piping signals, buzz runs, streaker flights, and puffs of the Nasonov pheromone.

### **Thursday Morning**

### **Building Better Bees**

### **Tech-Transfer Teams: Working for Beekeepers –Katie Lee**

Tech-Transfer Teams work directly with commercial, migratory beekeepers in the Upper Midwest (North Dakota and Minnesota) to increase beekeeper knowledge about the disease and pest levels in their colonies, improve stock selection, and participate in collaborative and interdisciplinary research on key issues.

### **High and Low Tech Solutions to Building Better Bees in Canada –Rob Currie**

Many believe "building" better bees is part of the answer to necessary to address the dramatic honey bee declines experienced in the US, Canada, and Europe. Rob will share the unique Canadian approach to "building" better bees.

### **Factors in Failing Queen Health –Jeff Pettis**

Honey bee queens are not lasting as long in colonies and many factors could contribute to the rapid turnover of queens in colonies. We tested the viability of sperm in queens heading good colonies vs. colonies that were in poor health and also looked for pesticide residues in these queens. A discussion of these factors and other possible impacts on queen health will be made.

### **A Forager's Challenge**

### **Worldwide Pollinator Declines; Beyond CCD –Jeff Pettis**

Honey bee colony losses in the US continue to average over 30% in the fall and winter, while the number of beekeepers reporting CCD-like symptoms have decreased over 7 years. The complex nature of stressors within the hive will be discussed, including nutrition and pesticide stress.

### **A Bee's Hazard Statement: Caution! Pollen May Be Dangerous to Your Health!**

–Diana Cox-Foster

Bees are encountering more than just good nutrition when they are visiting flowers to gather nectar and pollen. We (Jim Frazier, Chris Mullin, Maryann Frazier, and myself) have found that the pollen can also inadvertently serve up pesticides and viruses. I will discuss the data underlying our findings and how the pesticides can affect the bees susceptibility to the viral diseases. I will also offer suggestions for paths forward to overcome these hazards.

## Conference Session Descriptions *continued*

### Safe Sex in Plants – *Andy Stephenson*

Floral visitors can serve as vectors for a wide variety of pathogens that enter the plant via the floral organs. Other pathogens can land on floral organs via air streams and water. This presentation will focus on the ways that prudent plants practice safe sex.

### Thursday Morning Symposia-Related Breakouts

### A Primer on Floral Anatomy and Pollination Biology – *Andy Stephenson*

This talk will use a series of slides to demonstrate the roles of floral color, shape, odor, inflorescence architecture, and types and quantities of floral rewards on pollen dissemination and pollen accumulation on the stigma. It will look at pollination from the plant's perspective.

### Queens; Show and Tell – *Jeff Pettis*

Queens have a critical role in the colony. Recently we have increasing concerns about the health of queens and the potential contribution of unhealthy queens to colony declines. We will discuss issues related to queen health and examine factors that can show and tell us something about the health and viability of our queens.

### Thursday Afternoon

### Building Better Local Bee Populations

### How We Can Work Together to Build Better Local Bee Populations – *Dave Tarpy*

Interest in queen rearing and selection has increased in the past few years. Many beekeepers want to propagate colonies that continue to survive well, year after year, in a particular area to avoid purchasing queens that may or may not be well suited to their area of the country. Many beekeepers also want to propagate colonies that do not require any treatment (or minimal treatment) for Varroa mites and diseases. While there is ample desire and hard work to raise queens, having a detailed knowledge and understanding about how to accomplish these goals is the only means by which such selection programs can succeed. The goal of this presentations is to understand the general concepts about how to improve queen rearing and implement selection of genetic stock by focusing on general biological principles of Mendelian and quantitative genetics, selection protocols, and breeding design."

### Thinking Beyond Your Apiary; Tools and Strategies for Improving the Neighborhood – *Mike Palmer, Dan O'Hanlon, Dennis Keeney, Troy Hall, & Jeff Berta*

In an effort to improve the honey bee stocks in their region, many beekeeping associations are attempting some type of breeding program. The biggest hurdle, on their road to success, is getting their quality queens into the hands of the people where they will do the most good; not only for the neighborhood, but also for the state as a whole. This is an open discussion and working session with experienced leaders in this area.

### Innovative Outreach and Partnerships

### Beeing Informed. Survey says: Beekeeping management practices that work and that don't. – *Dennis vanEngelsdorp*

The Bee Informed Partnership (BIP) has performed winter loss and management surveys for over three years and collected over 10,000 beekeeper responses. This rich data set allows us to look closely at different management methods and how they correlate with colony wintering success. Come hear the highlights!

### The COLOSS Network: A Global Approach to Improve Bee Health – *Vincent Dietemann*

The recent global colony losses have triggered an unprecedented collaboration effort to understand and mitigate honey bee colony losses. The activities and outcomes of the COLOSS (prevention of Colony LOSSes) network will be summarized. The network has over 300 members from more than 60 countries, reaching well beyond Europe, where it was born. The network was particularly active in research on honey bee health, standardization of research methods, education of early stage scientists, and extension.

### Bee Partners in Kenya and USA: Solar Wax Melter /Beeswax Exchange as a Starting Point – *Elliod Muli*

Penn State researchers are collaborating with Kenyan scientists and beekeeping specialists to assess the health of honey bees in Kenya. But Kenyan and US beekeepers are also in the process of establishing a partnership that is mutually beneficial to both parties. Join us to hear about the partnership, and how you can get involved.

## Conference Session Descriptions *continued*

### Thursday Afternoon Symposia-Related Breakouts

#### Blueprints for Building Better Local Bee Populations – *Session speakers and YOU*

This is a working session, led by session speakers, aimed at providing input on best management practices currently being developed for improving local queen rearing efforts that can also contribute to healthier local honey bee populations.

#### Bee Partners: Kenyan and US Beekeepers – *Elliid Muli and Maryann Frazier*

At EAS 2011 a similar workshop resulted in the idea of a solar wax melter/wax exchange project between US and Kenyan beekeepers. To date 15 solar melters have been sponsored by US beekeepers and supplied to Kenyan beekeepers. We will review the progress that has been made, the challenges that need to be addressed, and where we go from here.

### Friday Morning

#### New Tools to Address Old & New Problems

##### Modeling as a Tool for Assessing Honey Bee Colony Health – *Jim Frazier*

A recently developed stage-structured population dynamics model uses our knowledge of the functioning of the honey bee colony to produce a highly dynamic method for predicting what combinations of stress factors can do to alter the development and survival of colonies. Using realistic cycles of pollen and nectar foraging dynamics for a colony under different scenarios, very precise predictions of colony development can be tracked throughout the year. Accurate predictions of overwintering honey stores at different latitudes and size of the overwintering colonies have been validated using independent sets of data from other previously published studies in the literature. The anticipated use of this model for researchers and beekeepers will be discussed.

##### What Can Genomics Teach Us about Honey Bee Health? – *Christina Grozinger*

We have examined the impacts of several stressors (pathogens, parasites, and pesticides) at the genomic level to determine if they perturb common or distinct pathways, and if these pathways are related to particular physiological functions or social behaviors. We have found these stressors all modulate metabolic and nutrition-related pathways, suggesting that nutrition can mitigate the impact of these stressors. We have extended these studies to survey honey bee populations in East Africa, to

determine if common stressors are associated with honey bee declines in the US, Europe, and Africa.

##### Recent Advances in Bee Risk Assessment in the EU – *Helen Thompson*

Formal pesticide risk assessment for honey bees in the EU has been in place since the 1980s. However, since its inception, both the classes of pesticide used and application methods have changed, and risk assessments in place evolved in parallel. This presentation will highlight the recent changes in risk assessment and data requirements in the EU.

##### A New Way of Looking at “Old” and “New” Mites – *Diana Sammataro*

We will discuss the current status of old mites (*Varroa* and tracheal), new mites (*tropilaelaps* and *eugarroa*), and the tools used to study them, including scanning electron microscopy, proteomics, and molecular techniques. We'll also discuss microbes carried on mites and the future direction of research.

##### Honey Bee Microbiota: Maybe It's the Little Things that Matter – *Paul Niemczura*

The importance of the microbiota within an organism and its environment has been a focus of recent biological research and is proving to be crucial to good health of all higher order animals. This lecture will review the history of research done on honey bee microbiota and present work being done at the University of Delaware to understand bee bread microbiota and the effort to develop a simple diagnostic tool to study this field.

### Beekeeping Around the World

##### Keeping Bees Healthy in Europe – *Vincent Dietemann*

Europe implemented a diversity of approaches to improve honey bee health. Measures range from EEC wide legal actions to state specific or local branch organization. I will give a few examples of such initiatives with a stronger focus on Switzerland, where the beekeeping branch was recently reorganized to cope with the recent challenges.

##### Traditional Beekeeping in Kenya: A Contributing Factor to Bee Health? – *Elliid Muli*

This presentation will highlight some of the traditional beekeeping practices that may be contributing to honey bee health in East Africa. Ideally, I will talk about beekeeping in East Africa and exploring Extensive versus Intensive beekeeping practices on honey bee health.

## Conference Session Descriptions *continued*

### Challenges Facing Beekeepers in the UK —Helen Thompson

The UK has unique databases on honey bee disease incidence, colony loss, and pesticide incidents. This presentation will outline the support to beekeepers to combat bee diseases in the UK, measures to improve bee health, and the data available on colony loss and its causes.

### Can We Manage Problems Causing Colony Losses in Canada? To Bee or not to Bee... —Rob Currie

Keeping and overwintering bees in Canada presents significant challenges. Rob will discuss this unique environment and what beekeepers and research are doing to minimize losses, but will it be enough?

### Coping with Africanized Bees & Bee Mites in South and Central America —Dewey Caron

Africanized honey bees have colonized all but extreme South and North America. They are the ecologically dominant honey bee, best adapted for tropical and semitropical America. Beekeepers have adapted their beekeeping and selected for manageable strains, but do not need to control bee mites in colony care. They are a success story which we can learn from, as we seek to cope with heavy colony losses.

### Friday Afternoon Workshops & Breakouts

#### Honey Bees & Computers

### A Decision Support System for Honey Bee Colony Management —Bruce Miller

We use computers to help us do almost everything these days. Join us for a look at how computers can help us determine the health of our hives and predict if they will survive the winter. Participants will be beta-testing this creative new tool. Spaces are limited; please sign up at the registration desk.

#### Honey Bees in Culture

### Writing about Bees —Mark Winston

We all have things to say about bees, and writing for a newsletter, magazine, newspaper, or even your own journal is a great way to express the lessons we've learned from bees. We'll talk about how to find topics and a voice to write in, and do a short bit of writing to get you started.

### Drawing on the Hive —Jay Hosler

As many bulletin boards, refrigerators, and office doors will attest, most people find comics and cartoons an irresistible means of expression. In this interactive session, participants will hear about how the author uses comics to bring a hive to life and learn how to employ comics to tell their own stories about bees and beekeeping.

### Beeconomy and Breaking through the Grass Ceiling —Tammy Horn

Taking a stab at the "grass ceiling" that keeps women agrarians earning less than male counterparts, *Beeconomy* stresses the need to change the economic pattern that, as with our summer lawns, lets women grow only so far, before curtailing progress. Women tend to live longer than men, earn less money than men, and have more direct access to food supplies and nutrients fed to the family than their male counterparts. *Beeconomy* shows how some women around the globe have redefined or supplemented their incomes by becoming authors, swarm removal specialists, top bar hive beekeepers, migratory beekeepers, queen producers, artists, wax chandlers, extension agents, and researchers.

#### How To: Bees

### Reading the Hive—Do We Always Need to Open? —Dewey M. Caron

Our colony inspection begins as we enter the apiary site and do a quick perusal before the entrance of a colony. Do we always have to open to detect problems? What can we "read" about a hive, before entering, that will make our inspection more focused and less disruptive of the colony itself?

### Performing Hive Assessments —Katie Lee

Learn what to look for while doing a hive assessment. We will go through hives and look for signs of health, disease, and good nutrition. Also learn how to test for Varroa.

### Managing Risk in Honey Production: From Hive to Pantry —Deb Delaney

An experiment in honey marketing—come learn about what attributes of honey are important to the consumer and how these attributes affect a consumer's willingness to pay.

### Top-Bar Hive Beekeeping: Financially Sustainable —Wyatt Mangum

Top-bar hives are a low cost way to keep bees without heavy lifting, and they have revenue potential from honey, wax, pollination rentals, queens, and even package bees. Learn about a comprehensive beekeeping system using top-bar hives based on keeping 200 of them for over 25 years.

## Conference Session Descriptions *continued*

### How To: Products

#### Candle Making...Fit for the Pope —*Martin Marklin*

Martin Marklin is the owner of Marklin Candle Design, one of only seven companies in the United States that fashions beeswax candles specifically for churches. Join him and learn why this precious gift of the bee was chosen for liturgical candles, and explore the challenges of making large candles (over 6 feet tall)...candles fit for the Pope. This is an interactive break-out session, with plenty of time for questions.

#### Mead Making 101 —*Bob Talkiewicz*

Who does not want to know how to make mead? Bob is an award-winning mead-maker and will share his secrets not only on how to make mead, but how to make GREAT mead!

#### Making Comb Honey —*Herman Danenhower*

Making comb honey takes special skill and know-how. Herman will discuss comb honey production in general, and then focus on the use of the Hogg Cassettes, a system of comb honey production that makes this process so easy anyone can do it!

### Team Work

#### Gamma Irradiation —*Brian Marcy and Mark Antunes*

Thanks to the presenters, Pennsylvania beekeepers now have access to gamma irradiation to purge their combs of disease pathogens. This technique is effective and reasonably priced, but takes serious coordination and preparation. Brian and Mark will tell you how it's done.

#### Let's Do It Together —*Grai St. Clair Rice & Chris Harp*

Everything we do matters. Look beyond your own backyard. Encourage neighborhood involvement in understanding forage and lawn care products for healthy bees. Explore the potential relationships between beekeepers and the broader agricultural world of farms, cattle and dairy operations, and orchards. Consider developing cooperative networks for honey and beeswax products.

#### Marketing for Small Scale/Sideliner Beekeepers —*Charlie Vorisek*

Marketing is a key ingredient of profitable beekeeping. Learn the secrets of how to successfully market your honey and other hive products from an experienced beekeeper and Pa State Beekeepers' Association president.

### Apiary Work

Hands-on sessions range from demonstrations on how to successfully evaluate your colonies and assess Varroa populations to identifying brood diseases. There will also be an opportunity to see and learn how Kenyan beekeepers keep and manage African bees in traditional logs and Kenyan top-bar Hives.

### Queen Rearing

#### Practical Queen Rearing Techniques —*Elina Lastro Niño and Bernardo Niño*

Queen rearing electives on Monday afternoon will be led by Dr. Elina L. Niño and Bernardo Niño who, combined, have over 10 years of queen rearing experience. This workshop will be devoted to the Doolittle grafting method and the participants will have ample time to learn and practice grafting skills with larvae from a different bee stocks. Class-size limited to 20 perclass. Sign-up at the registration desk.

### Other Breakout Sessions

#### Detecting Nosema Infection in Honey Bees —*Holly Holt*

Explore dissection of the honey bee digestive tract with Holly Holt and learn how to identify abnormalities that might relate to signs of *Nosema* infection. Study *Nosema* biology and pathology in the honey bee: how to identify *Nosema* spores with a compound microscope and how to quantify infection levels. Samples will be provided, but attendees are encouraged to bring 20-50 foragers from their own hives to screen for *Nosema* infection (each hive sample should be stored separately). To collect foragers, block the entrance of your hive and place returning bees (with pollen pellets attached to their legs) in a jar of 70% isopropyl alcohol. Alternatively, older bees may be collected from the outer frames or inner cover lids of your hive.

#### Bee Lining —*Tom Seeley*

If we can find bees on flowers near the apiary site, we will have a practical, hands-on demonstration of the ancient craft of lining wild honey bees back to their nest.