The Texas Beekeepers Association
Journal

President's Report
from Ashley Ralph

I feel like I need to start this article by saying - I can't wait to see everybody in November! The event team has been working so hard and the program looks great! We've had live events from Brazos Valley Beekeepers Association, The State Fair of Texas, and the Bee Weaver Cookoff benefiting Real Texas Honey. It's been great to see beekeepers from around the state again and reconnect with familiar faces.

While we head into the Fall, it's important to remember that your bees are raising their winter bees as we speak. This means nutrition is of the utmost importance! Be sure your bees are stocking up nicely for the winter and have enough weight on them to get through to March if you can. If you haven't already treated and you plan to treat - now's the time. As we head into the Fall, it's time for the bees to prep for winter. Here's to hoping for a good Fall flow for our bees to work!

A reminder that we're taking applications for leadership roles within the organization, ideas for resolutions for 2022, Honey Queen Program applications, and that we'll have our TBA Annual Business Meeting at the TBA Convention in Galveston coming up in November. We hope to see you there!

TBA has been busy - here are a few things we've had in the works:

Texas Honey Bee Education Association - has recouped its investment on the Texas license plates. Fundraising efforts for the Nevin Weaver Honey Bee Excellence Foundation have been a wonderful success so far - we're so close to our goal!

Real Texas Honey - Beekeeper spotlights are coming up. I can't wait to learn more about some of our RTH members while promoting Real Texas Honey!

TBA Website - there are so many new resources that we're excited to share with our members! This includes curated resources from insurance to lab testing and everything in between.

Club Resources - we've added a great collection of club resources to the website. If you're looking for a guide on creating a youth program for your club, starting a queen program, as well as coloring pages for presenting to youth - check out our club resources on the TBA website.

Beginner Beekeeping Resource (TexasBeekeeping101.com) - As part of the S.A.R.E. grant that TBA did in partnership with TAIS, Agrilife Extension, and Texas Master Beekeepers, the online resource for 4H, Youth, and adults is available at www.texasbeekeeping101.com This site offers resources and learning tools for bee biology, management, and more!

TBA News - Keep up to date on what's happening in the world of bees through our website. We've curated bee related articles, TBA updates, and more.

There's always more going on so if you're interested in getting involved, volunteering, and helping to bring value to our members - we'd love to have you. Find our volunteer application online at the TBA Website. We've got some great projects planned as we round out the end of the year and head into 2022!

Cover Picture from Ed Brown Photography, Kentucky Hills

The Brantley Column

from S. S. Brantley
2016 Life Member Texas Beekeepers Association
2017 Life Member Louisiana Beekeepers Association

The last wildflower and Goldenrod bloom will provide a natural pollen source for bees to store from October until the first frost kills all the vegetation. A check of your brood chambers may reveal three center frames packed solid with pollen. This indicates the bees are doing their best to provide food for any new brood that develops in the late fall. This surplus of pollen also indicates the hive will be ready to provide abundant food resources for the buildup next spring.

If you keep bees in a single brood chamber hive, you will need to monitor conditions closely to be sure there is space for the queen to continue laying eggs as long as the weather stays warm. To assist a single brood hive in having room for eggs, consider placing a super on the hive to provide a space to store any nectar that is collected. This would be a winter food supply for the hive and leave room for brood in the bottom box.

If you run double brood chambers, the bottom chamber should contain sufficient space for the queen to continue to lay as long as temperatures permit. She should have frames containing a good capped brood pattern and frames of pollen stored next to the frames of brood. The two outside frames will probably be filled with capped honey. There may be as many as four frames of capped honey on each side of the hive. These frames do double duty. They help insulate the brood chambers while providing a ready supply of food during the early fall weather before the bees cluster tightly and begin to move into the upper chambers to survive the last part of the winter.

The top brood chambers should contain frames of capped honey and may also have solid frames of pollen. Since the queen will begin to lay eggs under the cluster come spring, it is necessary for pollen to be readily available to feed the young larvae that will begin to emerge.

If your inspections show there is little or no stores of nectar in the hive, begin feeding a 2:1 sugar water mixture. The thicker syrup will not require the bees to evaporate so much moisture compared to a lighter 1:1 mixture. In our area, a double brood hive with the frames in the top brood chamber packed with stores should not need feeding during the winter months. As temperatures begin to warm in the January through March time frame, feeding a dry pollen substitute and a light 1:1 sugar water mixture should stimulate the queen to begin increased egg production in preparation for the new bee year.

Are the corners of your hive becoming damaged because you always stick the hive tool in the corner to separate boxes? This sometimes results in a small gap that will encourage the bees to eat the wood out in the corner and create their own entrance. Try inserting the hive tool further down the side to prevent damage to the corners.

Insert your hive tool into the entrance and feel for a bee-produced "propolis door" that is being added to the bottom corner of the frames. If you feel a buildup of propolis, the bees are telling you they are concerned about the size of the entrance. Insert an entrance reducer on the hive.

Combine a weak hive with a stronger hive. Weak hives with poor brood patterns are much less likely to survive winter.

Varroa Mites: The University of Florida has a pdf file on their website with good information about varroa mites. The pdf includes a "Resources" section at the end with links to several documents and videos: https://sfyl.ifas.ufl.edu/media/sfylifasufledu/osceola/documents/agriculture/varroa-mite-control.pdf

TEXAS BEEKEEPERS ASSOCIATION

2021 Annual Convention

November 6th & 7th, 2021
Moody Gardens - Galveston, Texas

FEATURING GUEST SPEAKERS...

Megan Mahoney

Lewis Bartlett

...AND MUCH MORE!

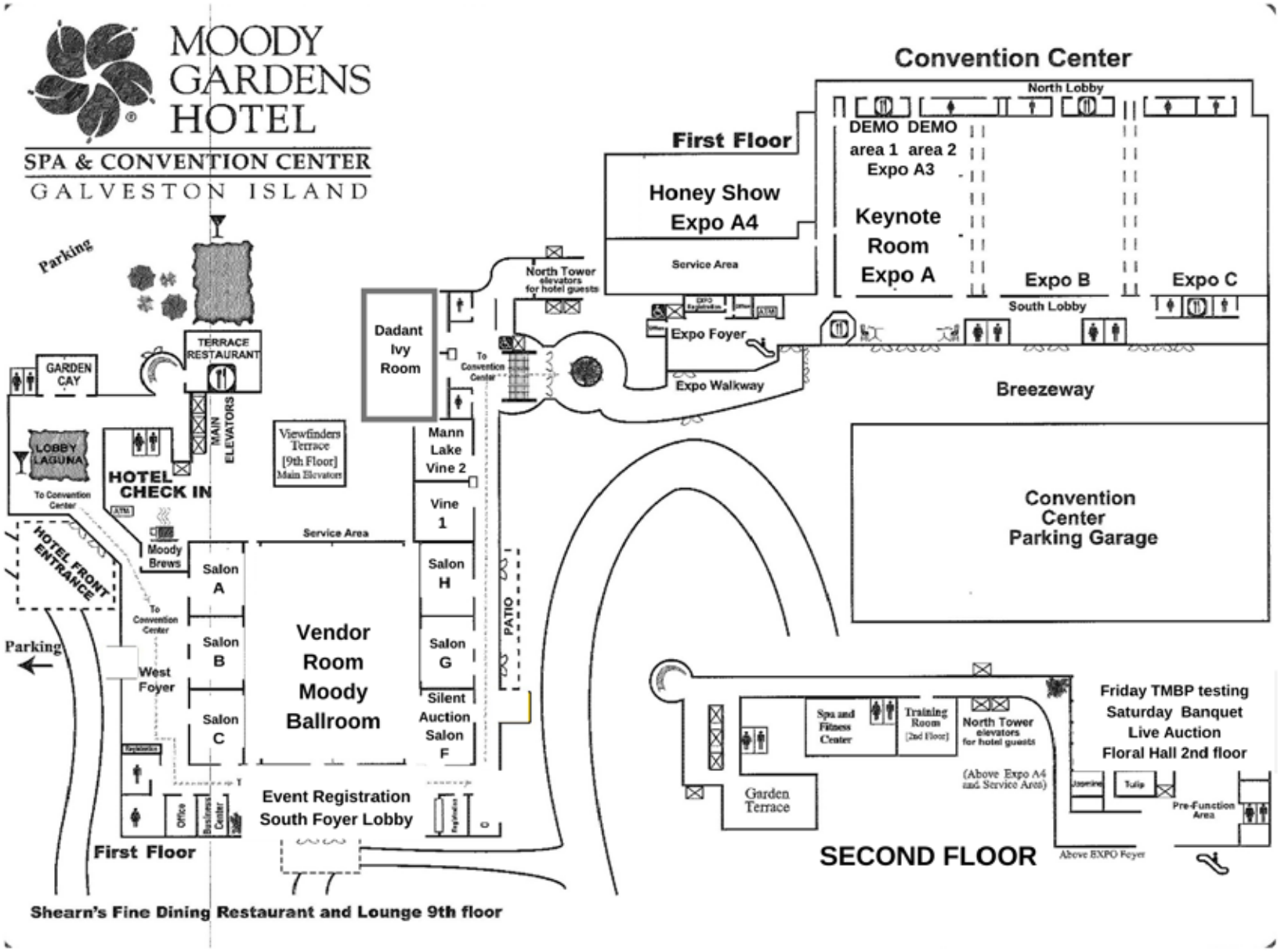
- Additional speakers!
- Online Raffle!*
- Live Demos!
- The Texas Honey Show!
- Silent Auction!*
- TBA Banquet!
- Live Auction!*
- Beekeeping Vendors!

*THBEA activities

TICKETS: $125/ MEMBERS $160/NON-MEMBERS $50/17 AND UNDER

Join us on November 6th & 7th at Moody Gardens for a fun-filled weekend of educational speakers, beekeeping vendors, the Texas Honey Show, and beekeepers networking. Bring the entire family for a buzz worthy weekend adventure. Pre-registered hotel guests will have the opportunity to purchase discounted weekend passes to Moody Gardens with unlimited access to all attractions!

Register today at www.texasbeekeepers.org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GALVESTON ISLAND
Parking
TERRACE RESTAURANT
GARDEN CAY
LOBBY LAGUNA
To Convention Center
HOTEL CHECK IN
MAIN ELEVATORS
HOTEL FRONT ENTRANCE
Moody Brews
Parking
West Foyer
Salon A
Salon B
Salon C
Service Area
Vendor Room Moody Ballroom
Viewfinders Terrace [9th Floor] Main Elevators
Dadant Ivy Room
North Tower elevators for hotel guests
To Convention Center
Mann Lake Vine 2
Vine 1
Salon H
Salon G
Silent Auction Salon F
PATIO
Event Registration South Foyer Lobby
Office
Business Center
First Floor
Shearn's Fine Dining Restaurant and Lounge 9th floor
Convention Center
First Floor
Honey Show Expo A4
Service Area
North Lobby
DEMO area 1
DEMO area 2
Expo A3
Keynote Room Expo A
Expo B
Expo C
South Lobby
Expo Foyer
Expo Walkway
Breezeway
Convention Center Parking Garage
Spa and Fitness Center
Training Room [2nd Floor]
North Tower elevators for hotel guests
(Above Expo A4 and Service Area)
Garden Terrace
SECOND FLOOR
Above EXPO Foyer
Friday TMBP testing
Saturday Banquet
Live Auction
Floral Hall 2nd floor
Jasmine
Tulip
Pre-Function Area

SATURDAY NOVEMBER 6, 2021 TBA CONVENTION SCHEDULE

Schedule is Subject To Change as Needed

START TIME	FINISH TIME		Location
7:15 AM	8:00 AM	**Conference Registration & Check-In Opens**	**South Foyer Lobby**
		Events During Convention	
7:15 AM	10:00 AM	**Honey Show Registration**	**EXPO A4**
7:15 AM	6:30 PM	**Exhibitor Showcase**	**Moody Ballroom**
7:15 AM	3:00 PM	**Silent Auction**	**Salon F**
1:00 PM	3:00 PM	**Black Jar Honey Judging "PEOPLE'S CHOICE"**	**South Foyer Lobby**
3:30 PM	5:00 PM	**TBA Business Meeting**	**EXPO A**
		Welcome to the 2021 TBA Convention	
8:00 AM	8:15 AM	**TBA Officer Greeting - John Swan**	**Exhibit Hall A**
8:15 AM	8:25 AM	**Save Bees - Save Vets Hives for Heroes, Steve Jimenez**	
8:30 AM	9:30 AM	**Keynote Problems and Promises of Darwinian Beekeeping, Dr. Lewis Bartlett**	
9:30 AM	9:55 AM	**BREAK**	

BREAKOUT SESSIONS BEGIN

	10:00-10:50 AM	11:00-11:50 AM	12:00-1:25 PM	1:30-2:20 PM	2:30-3:20 PM
	SESSION 1	**SESSION 2**		**SESSION 3**	**SESSION 4**
Dadant Ivy Room	**Women in Beekeeping commercial,queen rearing,marketing, husbandry,production** Ashley Ralph, Laura Weaver, Jodi McCumber, Natalie B., Tanya Phillips	**Running a Bee Business** Justin Russell, Chris Moore, Jodi McCumber, Blake Shook		**The Bee Removal Business Strategies and Advice** Charlie Agar, Connor White, Brandon Fahrenkemp, Justin Russell	**Learning From Mistakes - What I Would Do Differently** Jonathon Walker, Justin Russell, Stan Gore
Vine Room 1	**Controlling and Correcting Defensive Hives** Blake Shook	**What Makes Infectious Diseases Deadly - Viruses, Vectoring, Varroa, Virulence** Dr. Lewis Bartlett		**50 Shades of Gray 3 Years in a Carniolan Breeding Program** Megan Mahoney	**Growing Pains- Expanding to a Sideline or Commercial Beekeeper** Blake Shook
Mann Lake Vine Room 2	**Marketing Your Business: Public Relations, Social, Website, Content** Nicole Buergers	**Biology of Africanized Honey Bees in the Americas** Dr. Juliana Rangel		**BIP's Boots on the Ground Tech Transfer & the Bee Community** Cade Houston	**Antimicrobial Properties of Bioactive Honey Dr. Ozturk**
Salon H	**Pollination, Pollinators and Gardening for Pollinators** Ed Irwin	**Nutrition Management for Robust Populations** Lance Wilson	**LUNCH BREAK**	**ABF Honey Princess** Virginia Allen	**Double Nucs - Developing a Sustainable Apiary** Chari & James Elam
Salon G	**Top Bar Beekeeping Beginners** Brandon Fahrenkemp	**Top Bar Beekeeping Advanced** Les Crowder		**Apitherapy - A Practical Guide** Cyrus Nasr & Sandi Murray	**Varroa Monitoring and Sampling - A Demonstration** Mary Reed
Salon C	**Taking Your Bees From Surviving to Thriving** Chari & James Elam	**Zen & The Art of Bee Removal tools, tips, and techniques** Charlie Agar		**Managing Africanized Bees** Lance Wilson	**Beekeeping 201** Nathalie B.
Salon B	**What Every Beekeeper Should Know About Honey Bee Foraging** Lance Wilson	**Beekeeping 101** Nathalie B.		**Hive Health and Nutrition for the Hobbyist and Sideliner** Blake Butler	**Bee All That You Can Bee - How Honeybees and Beekeepers Have the Same Traits for Success** Ed Irwin
Salon A	**Honey Bee Pests and Diseases** Ph. D. Candidate Taylor Powell	**Understanding the Enemy: New insights on Varroa Mite Biology and Behavior** Ph. D. Candidate Taylor Reams		**Coast to Coast Honey Tasting** Monica Siwiak	**Bitter Sweet Marketing 101** Jodi McCumber
Demo Area #1 EXPO A3	**Making Mead** Terry Wright	**Working with Natural Wax Frames** Art Thomas		**Wax Making - earrings or pendant and rolled candle** Dodie Stillman	**Wax Making - luminary/planter with flower decorations and fire starters** Dodie Stillman
Demo Area #2 EXPO A3	**Feeding Soft Sugar Bricks & Trickle Feeding Technique** Stan Gore	**Honey Sensory** Tanya Phillips		**Making Your Own Lip Balm** Myra Smith & Beth Derr	**Making Your Own Lotion** Myra Smith & Beth Derr

SUNDAY NOVEMBER 7, 2021 TBA CONVENTION SCHEDULE

Schedule is Subject To Change as Needed

START TIME	FINISH TIME				Location
7:30 AM	8:00 AM	**Conference Registration & Check-In Opens**			**South Foyer Lobby**
Events During Convention on Sunday					
7:30 AM	1:00 PM	**Exhibitor Showcase**			**Moody Ballroom**
7:30 AM	Noon	**Silent Auction item pick-up**			**Salon F**
Welcome to the 2021 TBA Convention					
	8:00 AM	**Biscuits & Honey Breakfast**			**EXPO A**
8:05 AM	8:15 AM	**TBA Morning Greeting, Dodie Stillman**			
8:15 AM	9:15 AM	**Texas Beekeeping Laws - an update** Mary Reed, Davonna Koebrick, Joe Morris, Dodie Stillman - moderator			
9:15 AM	9:30 AM	**BREAK**			
		BREAKOUT SESSIONS BEGIN			
		9:30-10:20 AM	**10:30-11:20 AM**	**11:30-12:20 PM**	
		SESSION 1	**SESSION 2**	**SESSION 3**	
Dadant Ivy Room		**Honey in Cancer Treatment** Dr. Ferhat Ozturk	**Effective Methods Of Controlling Parasites in the Hive** Dr. Lewis Bartlett	**Getting Off the Synthetic Chem-Trail- Hive Health and a Commitment to Minimal Intervention** Jonathon Walker	
Vine Room 1		**Honey Bees As A Superorganism** Ashley Ralph	**Nutritional Ecology Of Honey Bees** Dr. Juliana Rangel	**Becoming A Beekeeper - All About This Fascinating Hobby** Ed Irwin	
Mann Lake Vine Room 2		**Top 10 Best Practices in Modern Beekeeping** Lance Wilson	**Agritourism - Creating a Bee Destination** Laura Weaver	**Queen Rearing** Megan Mahoney	
Salon H		**Producing Honey - Preparing and Managing Hives for Honey Flow** Blake Shook	**Simple Splits - Four Options With Post Care** Chari & James Elam	**Diversify Y'all - How to Make Money as a Sideliner** Charlie Agar	
Salon G		**Photographing Pollinators - Keys to Improve Your Photographs** Ed Irwin	**Marketing Real Texas Honey** Chris Moore	**Mentoring and Consulting for Success** Nicole Buergers	
Salon C		**Bee Removals - A Step by Step Guide** Connor White	**Building a Honey House** Michelle Boerst	**Bee Safety - A Guide For When Things Go Wrong** Brandon Fahrenkemp	
Salon B		**MIS - Misinformation Tall Tales in Beekeeping** Art Thomas	**Integrated Pest Management, An Overview** Taylor Powell	**The Smell of Stress - Calming Beekeeping Practices** Les Crowder	
Demo Area #1 EXPO A3		**Making Beeswax Food Storage Wraps** Barbi Rose	**Local / Regional Bee Club Resources** Myra Smith	**Making Soap** Barbi Rose	
Demo Area #2 EXPO A3		**Making Mead** Terry Wright		**Making Top Bar Hives** Nathalie B.	
12:30 PM		**CLOSING CEREMONY & DOOR PRIZES**			**EXPO A**

Renew your Membership, or Join Us.

www.texasbeekeepers.org

If you change your address or email please contact Shirley Doggett at *sdoggett@mindspring.com*

or call (512) 924-5051

Look for the Honey Locator and Events Calendar

TEXAS BEEKEEPERS ASSOCIATION

2021 Annual Convention

November 6th & 7th, 2021
Moody Gardens - Galveston, Texas

Hotel Information

Moody Gardens Galveston
Seven Hope Blvd., Galveston, TX 77554
409-683-1299

To Book Room(s) please use the following link:
https://www.reseze.net/servlet/SendPage?hotelid=1722&skipfirstpage=true&page=2987

Room Rate is $149/night for Queen/Queen or King rooms.

(The deadline for reservations is 10/19 at midnight.)

Fall Testing for the Texas Master Beekeeper Program

When: Friday, November 5th, 2021

Where: Moody Gardens, Seven Hope Blvd., Galveston, TX 77554

Registration: Online registration begins on September 1st

Website: https://masterbeekeeper.tamu.edu/2021-fall-exam-registration/

Questions: Email us at TAIS@TAMU.edu


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There's still time to become a sponsor and supporter. For more information, contact us at
tradeshow@texasbeekeepers.org

2021

Local Club Centerpiece Contest

November 5th – 7th
Moody Gardens
Galveston, TX

2019 Winner

Are your local club members exceptionally talented and crafty? It's time to show off those talents at the 2021 TBA Annual Convention!

From artistic creations to bountiful baskets filled with your club member's favorite hive products, your local club talent's will shine as the centerpieces of our evening banquet. All entries will be judged and auctioned benefiting our THBEA educational fund. Will your local club take home the winner's plaque this year? Will your club's entry win the highest bid at the auction? Register today and show us your club's talents while supporting a great cause!

2019 People's Choice

Other 2019 centerpiece entries can be seen on the TBA Facebook page.

Rules for Entry:

- The club's total out of pocket expenses will be $25-$50, all other items to be donated.
- Entry height and width not to exceed 18-20".
- The theme is anything regarding bees, but each entry should be a reflection of your regional club (references to famous landmarks, area delicacies, local favorite items). You can proudly display your club name on your entry.
- Entry must be brought to the annual convention by a club member or representative
- Entries must be submitted at the registration table no later than 12:00 noon on Saturday

People's Choice Award:

- Voting will begin Saturday at 10:30 AM
- 5 votes for $5
- One set of votes per perspn

Contact Myra Smith at myras29@gmail.com or 903-573-1701

Pollination, it's all about timing

from Catch the Buzz

It's all about timing when it comes to pollinators

The finely tuned dance between plants and their pollinators is essential

Timing is critical for pollinators to be successful. Plants must be ready with pollen when they get there.

"When the flower blossoms, the bee will come," posits author Srikumar Rao. But what if they don't? What if the timing between flowers blooming and the bee's arrival to pollinate are off? While it might seem like a minor seasonal mishap, it could have significant impacts if those flowers are important food crops. The finely tuned dance between plants and their pollinators is essential for much of our food production, and it may be at risk due to warming temperatures.

Create phenological information for your garden's microclimate by collecting seasonal events like the appearance of the first buds on a favorite plant.

You've heard about the importance of pollinators — birds, bees, butterflies, bats and other small mammals that travel from plant to plant carrying pollen on their bodies to transfer genetic material. They are responsible for bringing us one out of every three bites of food, sustaining our ecosystems and producing natural resources by helping plants reproduce.

Timing is everything for pollinators to be successful; the plants they visit must be ready with pollen when they get there.

The study of the timing of seasonal biological activities is called phenology. First introduced in 1853 by Belgian botanist Charles Morren, it is the science that measures the timing of life cycle events in plants, animals and microbes, and detects how the environment influences the timing of those events. Many birds time their nesting so that eggs hatch when insects are available to feed nestlings, and insects often synchronize their emergence with leaf out in host plants. Alterations in temperature and precipitation can directly impact the abundance and distribution of plants and animals.

Climate change is impacting phenological events like flowering and animal migration. Around the world, many spring events are happening earlier, and fall events later than they have in the past. Some species seem to be adjusting to more frequent unseasonal temperatures, drought and extreme storms that come with climate change, but not all species are responding at the same speed or in the same ways. Plants may bloom before butterflies emerge to pollinate them, or caterpillars may emerge before migratory birds arrive to feed them to their young. How plants and animals respond to changes in their environment can help us predict whether their populations will grow or shrink, making phenology a leading indicator of climate change impacts.

Many birds time their nesting so that eggs hatch when insects are available to feed nestlings.

So, what does this mean to us gardeners?

As our local climate changes, it may impact what we grow, when we plant and harvest, and pest activity. We're likely to see a longer growing season, reduced chilling days, shorter dormancy periods for deciduous plants and extended periods that require irrigation. Insect pests may be present for more of the year and with larger populations. And pollinators, such as hummingbirds and bees, might arrive either too early or too late to feed on the flowers they rely on, which in turn can affect our garden's food production.

Now is a good time to start carefully observing seasonal events like the appearance of the first buds on a favorite plant, the first flowers on your fruit trees and the appearance of an indicator species of bird or insect, along with any unusual weather events. This phenological information, in your very own microclimate, can help guide you in making informed choices about what to grow and when to plant in the coming seasons.

Even better, write down what you observe. While it might seem mundane, according to Aldo Leopold, considered by many to be the father of wildlife ecology, "Keeping records enhances the pleasure of the search and the chance of finding order and meaning in these events."

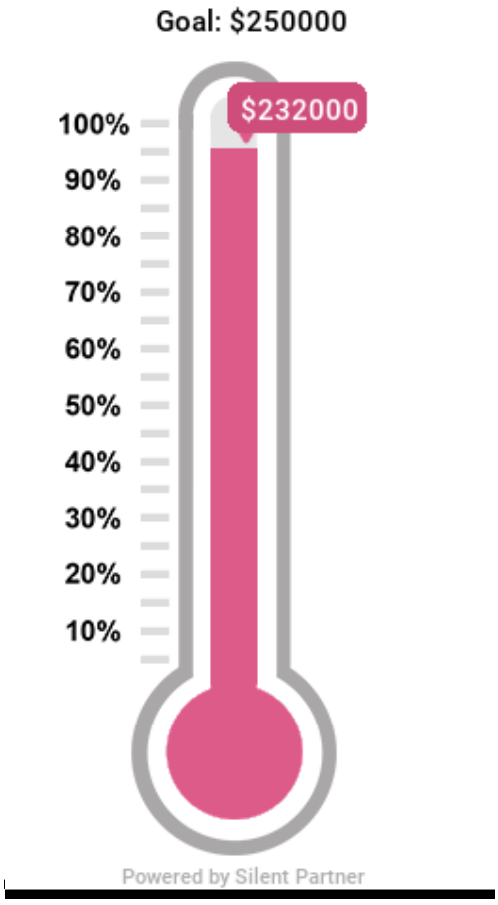
By noting our observations, we become more aware. Want to go one step further and share what's going on in your own backyard? Become a volunteer observer for the USA National Phenology Network, a national science and monitoring initiative focused on phenology. Through their program Nature's Notebook, (usanpn.org/researchers), resource managers, educators and others use your data for scientific discovery and decision-making. Your data is a big deal.

Texas Honey Bee Education Association
Launch of Major Fundraising Event

Nevin Weaver Endowment Fund

THBEA in its role as a charitable Educational/Research Association has been in conversations with Texas A&M about how we may work together more closely to benefit the Honey Bee Facility at TAMU and honey bee research in the future. As a result of this collaboration, THBEA is organizing a major fundraising effort to increase the Nevin Weaver Endowment Fund from its current level of $155,000 to a goal of $250,000, allowing for increased and more consistent honey bee research funding.

The Nevin Weaver Fund was established in December of 2009 with an original endowment of $75,000 from donors Dr. John and Janice Thomas and their daughter Valerie Hamilton under the administration of the TAMU Foundation. A guranteed rate of 4% per annum of the endowment value is available to be used by Dr. Juliana Rangel to cover expenses and projects in her department. Only the interest on the endowment can be used, ensuring funds for the future.



Mrs. Janice Thomas has kickstarted this fundraiser with a very generous gift of $25,000 - raising the fund to a level of $180,000. We thank her for her incredible gift and the knowledge that she so strongly supports the present and future of the Texas A&M Honey Bee Facility.

We know that many of you share Mrs. Thomas' commitment to education and research in this important area. Every contribution will move THBEA toward this important goal.

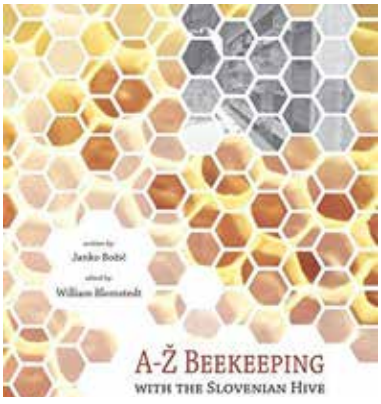
Checks payable to THBEA can be mailed to:
THBEA, Attn. Shirley Doggett,
400 County Road 440, Thrall TX 76578,
or on-line donations can be made at:
www.thbea.com/nevin-weaver-endowment-fund

“Dinner With Janko Bozic”

from Robin Young, Metro Beekeepers Association

Photo of: Janko Bozic

In May of 2018, I had the pleasure of having dinner with Janko Bozic the author translator of the one book in English on A-Z Slovenian beekeeping. It was a typical Slovenia evening with food served grown and raised right there on the farm or neighboring farms. Glasses were filled with your choice of white or red wines made right there in town. Pitchers of each wine brimming in the middle of the table. If you're lucky, a pitcher of mead would be there as well and tonight we were in luck. If wine or mead did not suit you, there would be a hot tea pot filled with linden tree leaves and flowers including other herbs and several choices of local honey for a sweetener.



The book he wrote has blueprints on how to build your own Slovenian Honey Bee House and much more.

Slovenian bee hives are worked from the back of the hive box. Winters in Slovenia can get very cold and having a building to help the honey bees maintain temperatures between 90 – 95 degrees can be the difference of having all your hives survive the winter and losing all your hives. Also, you can keep your processing equipment in the building and harvest right there on site. They often have running water, sinks, and anything you can possibly imagine.

Pictured above is the outside of an A-Z Hive house. You can see, on the right of the photo above, the

“Dinner With Janko Bozic”

from Robin Young, Metro Beekeepers Association

the bee house and watch the bee outside the window.

We talked late into the night with Janko. One of the things we discussed is, “How we would build an A-Z Hive House in Texas?”. Texas’ summers are hot, and winters are mild. Cold weather is not an issue.

Pictured above is an underground Honey Bee House

We finally concluded that building up a dirt mound on the side of the setting sun might be a possible solution.

Later in the evening, I asked Janko what he was currently working on. He brought up some very interesting theories about propolis, local bacteria, local fungus, and possible treatments. The theory goes something like this: Is it possible to use local propolis to treat or cure local strains of Malaria and other such infections. The thinking is that honey has different properties based on where that specific honey is harvested. Could the different properties of different tree resins and plant material, that the bees gather to make propolis, be studied along those same lines. It is a topic that quite a few of the leading minds in Slovenia had been pondering. It could have just been the free-flowing wine and mead, but the idea stuck with me still today. I have not heard of any studies on the subject yet, but it might be something one of our universities might take up.

Pictured above: dividing wall in a A-Z Bee Hive House.

Students can be on the other side of the clear glass and screen wall to observe a beekeeper working their hives. The students do not have to wear any protective clothing as they stand on the other side of the protective wall. It’s pure genius.

As I get a little older, I am constantly looking for ways to make beekeeping easier and safer to instruct new and future beekeepers. The A-Z Slovenian hive and building is a consideration. The thought of having a nice meal watching, hearing and smelling honey bees sounds appealing and calming. Just a little something to ponder bee friends.

Proverbs 16-24 Pleasant words are a honeycomb sweet to the soul and healing to the bone.

At Home Beekeeping Webinar

Distance Learning for Beekeeping Clubs

We're offering beekeepers the chance to attend virtual meetings from the comfort of one's own home using a computer or mobile device. Speakers include university researchers and extension specialists from across the SE US as well as USDA ARS researchers. Each event will bring participants up to date on timely beekeeping topics with time for Q & A included.

All are welcome!! Join us for this free event!!

- Sept. 28: Using *Varroa* management tools in combination, *with D. Aurell (AU)*
- Oct. 26: Pollinating partnerships among bee species, *with K. Delaplane (UGA)*
- Nov. 30: Viruses of honey bees, *with Alexandria Payne (TAMU)*
- Jan. 25: The many facets of honey bee nutrition, *with P. Chakrabarti (MSU)*

Last Tuesday of the month

6:30 – 7:30 pm Central Time

Watch via Zoom Webinar

https://auburn.zoom.us/j/904522838

or Facebook Live: **https://www.facebook.com/LawrenceCountyextension/**

Questions? Email Allyson Shabel ams0137@aces.edu

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How Bacteria Help Bees Digest Pollen Protein

by Dr. Vera Strogolova

Protein, an essential part of honeybees' diet

While we usually think of honey bees collecting nectar, an average-size colony may also bring in 100 pounds of pollen in a season.

Pollen is an essential part of the honey bee diet, providing a wide range of nutrients: protein, carbohydrates, lipids, vitamins, and minerals.

What is protein?

Proteins are large biological molecules that perform many different functions in living cells. Proteins are building materials in body tissues, muscles, and glands.

The most abundant protein in a honey bee is vitellogenin, a protein that influences stress resilience and is important to honey bee social organization.

Proteins are made up of smaller units called amino acids. There are twenty different amino acid units, and if a correct amino acid can't be found, whole proteins can't be synthesized. Honey bees can't make some amino acids "from scratch", and therefore these amino acids, called **essential amino acids**, must come from food. Without the proper nutritional composition in their diet, honey bees' survival is affected.

The essential amino acids for honey bees are arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine (De Groot, 1953).

Can honey bees digest protein?

Honey bees need to break down dietary proteins into smaller units called **amino acids.**

These amino acids can then be properly absorbed and digested, or reused. Protein is digested in the honey bee gut with the help of other specialized proteins, called **proteolytic enzymes**. Honey bees secrete proteolytic enzymes such as trypsin, but **gut microbes are a great source of proteolytic enzymes that support digestion.**

Bacteria's role in stored pollen/bee bread

Through the addition of nectar, glandular secretions, and certain bacteria, Herbert and Shimanuki in 1978 postulated that stored digestibility and nutritional value of the beebread / stored pollen is increased. In 2006, Human and Nicolson **confirmed a change pollen's appearance and nutritional composition** during collection and storage by honey bees.

Figure from COLOSS BEEBOOK1 (page 2) shows the appearance of pollen grains before (A) and after (B) addition of nectar and glandular secretions.

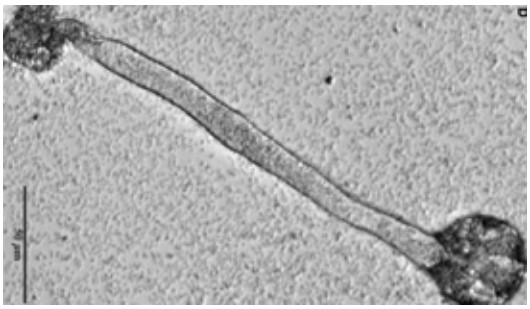
Fig. 33. Scanning electron microscopy pictures of *Aloe greatheadii* var. *davyana* pollen showing physical differences occurring in pollen grains after addition of nectar and glandular secretions; **(A)** Fresh pollen, **(B)** Bee collected pollen and **(C)** Stored pollen. Photos: H Human.

1Human, H; Brodschneider, R; Dietemann, V; Dively, G; Ellis, J; Forsgren, E; Fries, I; Hatjina, F; Hu, F-L; Jaffé, R; Jensen, A B; Köhler, A; Magyar, J; Özkýrým, A; Pirk, C W W; Rose, R; Strauss, U; Tanner, G; Tarpy, D R; Van Der Steen, J J M; Vaudo, A; Vejsnæs, F; Wilde, J; Williams, G R; Zheng, H-Q (2013) Miscellaneous standard methods for Apis mellifera research. In V Dietemann; J D Ellis; P Neumann (Eds) The COLOSS BEEBOOK, Volume I: standard methods for Apis mellifera research. Journal of Apicultural Research 52(4): http://dx.doi.org/10.3896/IBRA.1.52.4.10

Bacteria's role in stored pollen/bee bread (cont.)

In 2015, Anderson et al[2] reported that stored pollen does not undergo long-term nutrient conversion and that microbes do not predigest the pollen prior to consumption by bees. In their study, researchers analyzed fresh pollen and bee bread, and found pollen grain shells intact and containing very few bacteria in bee bread. **In contrast, pollen found in honey bee hindgut had many more bacteria attached.** These observations were interpreted to mean that the bacteria on pollen are associated with preservation, not digestion, of nutrients.

In 2021, another study[3] revealed a previously unseen effect of bacteria on pollen. Christiansen et al inoculated fresh pollen with Nectar-dwelling Acinetobacter bacteria and waited 45 minutes to see that the **bacteria "stimulated protein release by inducing pollen to germinate and burst."** A precise measurement of available protein indicated that **bacteria doubled available protein** from the pollen grains in the study. Therefore, previously unnoticed, **bacteria likely play an important role in increasing available protein from pollen,** either before or after pollen grains are consumed by honey bees.



Photograph of a pollen grain that germinated and burst ©Christiansen et al[3]

[2]Anderson, K; Carroll, M J; Sheehan, T; Mott, B M; Maes, P; Corby-Harris, V (2015) Hive-stored pollen of honey bees: many lines of evidence are consistent with pollen preservation, not nutrient conversion. Molecular Ecology 23:5904–5917
[3]Christensen, S M; Munkres, I; Vannette, R L (2021) Nectar bacteria stimulate pollen germination and bursting to enhance microbial fitness. Current Biology 31:1–8

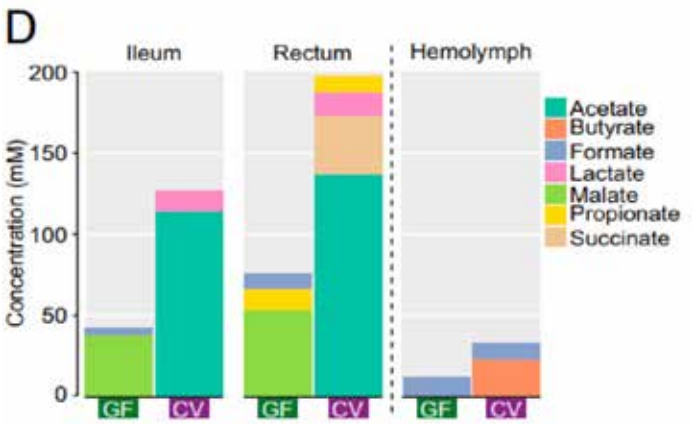
Bacteria's role in digestion in the honey bee gut

Honey bee gut microbiota contributes to digestion within the ileum and rectum. **Bacteria ferment pollen and nectar to produce nutritional molecules called Short-Chain Fatty Acids (SCFAs).**

These small fuel molecules (SCFAs) can be metabolized by honey bees directly.

In 2017 study[4], Zheng and colleagues treated honeybees with an antibiotic to remove most bacteria (GF) and compared these honey bees to conventional (CV) bees with normal microbiomes. **They showed that microbes are responsible for the production of SCFAs** (acetate, propionate, lactate, succinate, and butyrate). These SCFAs are decreased when bacteria are removed from honey

bees (GF). In conventional (CV) honey bees, SCFAs are absorbed into the hemolymph and their levels are higher in the hemolymph, where **these fuel molecules support honey bee development, hormonal signaling, and weight gain.**



Concentrations of SCFA in the ileum, rectum, and hemolymph of GF and CV honey bees © Zheng et al[4]

[4]Zheng, H; Powell, J E; Steele, M I; Dietrich, C; Moran, N A (2017) Honeybee gut microbiota promotes host weight gain via bacterial metabolism and hormonal signaling. PNAS 114 (18): 4775-4780

Summary

- Honey bees must have protein in their diet
- Pollen is the best source of protein
- Bacteria assist in preserving bee bread, extracting protein from pollen grains, and breaking down proteins and carbohydrates in the gut
- A healthy gut microbiome contains hundreds of non-core bacterial species

[5]Callegari, M., Crotti, E., Fusi, M. et al. Compartmentalization of bacterial and fungal microbiomes in the gut of adult honeybees. NPJ Biofilms Microbiomes 7, 42 (2021). https://doi.org/10.1038/s41522_021_00212_9

Which microbes?

Our understanding of microbes in the honey bee gut is growing. The microbes best characterized within the adult honey bee gut, also called core gut microbiome, are the five most consistent, ubiquitous, and abundant bacterial taxa: Snodgrassella, Gilliamella, Lactobacillus Firm-4, Lactobacillus Firm-5, and Bifidobacterium.

These core bacterial types coexist alongside a high number of less-frequent bacteria acquired from the environment, such as Erwinia, Serratia, Citrobacter, Acinetobacter, Lactobacillus not belonging to Firm-4 or Firm-5, Streptococcus, and Bacillus. A recent study[5] showed that the core bacterial community is made up of 32 species of bacteria, while 164 species of non-core bacteria are found in the same honey bee samples. Non-core bacteria in the honey bee gut are diverse and functional. One of their likely functions is to support digestion.

About the author

Dr. Vera Strogolova is a scientist fascinated by microbes. As a co-founder and CTO of Strong Microbials, Vera is charged with the development, research, and improvement of probiotics for honey bees.

Vera's work builds on her experience as a Quality and Safety Leader and research scientist working on animal probiotics in Danisco/Dupont subsidiaries.

Vera earned M.S. in biology from the University of Wisconsin Milwaukee, where she studied how organisms respond to sugar, and a Ph.D. from Marquette University, where she studied new aspects of how cells breathe.

Vera is currently serving on ABF Research Committee, COLOSS Nutrition Task Force, and writes for Bee Science News.com.

Things They Wish They Had Known

"The Continuing Journey of Two Ninth-Year Small-Scale Beekeepers"
TBA Journal Article – September 2021

by Roger and Sue Farr, Caddo Trace Beekeeping Association (CTBA), Mount Pleasant, Texas;
Master Level Beekeeper - Texas Master Beekeeper Program (Roger)

Pictures are by the authors unless otherwise indicated.

Photo - Hudson Old, *East Texas Journal*

"What do you know now about beekeeping that you wish you had known earlier?" We are beginning to plan introductory beekeeping courses.We recently asked that question of the first-year beekeepers in our lives. Several graciously responded and conveyed humorous anecdotes, simple tips, hard-earned lessons, and practical questions. Their responses focus on first-year beekeeping, but we can all learn from their lessons and plan more effective ways to train new beekeepers.

"Never ever open a hive at night!" The pain has finally subsided, and this beekeeper can now tell the story without cringing. Bees respond to light, and they respond quickly, en masse, and decisively. Bees do not understand that the beekeeper is simply trying to check the level in the feeder; they sense an intruder, and they defend their home. Inspect hives during daylight hours.

"What does 'queen presence' look like in my hive?" New beekeepers want to see their queens, and some think they have failed to inspect the hive properly if they don't spot her. Laying queens are photophobic and may go to great lengths to hide. The presence of eggs and larvae in all stages means that the queen was present in the hive three days ago, so the hive appears to be queen-right.

"Work with a purpose." If beekeepers simply open a hive to see what is there, they may not see what is actually going on. There are many reasons to inspect a hive; simply because it's Tuesday is not a good reason to open a hive. Check for queen presence. Count available resources. Watch for queen cells. Notice the location of drone brood. Smell for unusual odors. Verify that the queen has room to lay eggs. Listen for the roar of a queenless hive. Recognize when the bees are "runny" and telling you that your time is up! Decide the purpose of each inspection, have necessary equipment and tools ready, be aware of the clock, do the job, and close the hive with your mission accomplished.

"How do I keep my smoker lit?" Smokers are like kitchen knives; each person has a favorite and knows how to use it effectively. It may take a while for new beekeepers to know what fuel, filling method, and pumping action is necessary. One of our new beekeepers relies on his firefighting training and keeps cotton batting and burlap on hand. Others store pine needles in buckets, out of the rain. Some families designate one person to always be in charge of the smoker. Find out what works, and do it every time. Always remember to "light" your smoker from the bottom by lighting the first bit of your fuel and then placing that in the bottom of the smoker. Continue to puff the smoker looking for a change of smoke color and listening for the chugging sound of an old steam engine to alert you that it's time to add more fuel.

"Use an audio recorder." It can be tricky to remember the details of a hive inspection, so it's a good idea to write notes during the inspection. One new beekeeper mentioned using an app on his phone to record his words during an inspection. Later, he listens to the recording and highlights action items for his next inspection.

"Wear a fishing vest under the bee suit and place frozen ice packs in pockets and a frozen bandana around the neck." Texas beekeeping is a running balance between wearing enough protective equipment to withstand defensive bees yet not succumbing to heat-related illness. YouTube videos shows beekeepers in shorts, tank tops, and sandals. Those

videos were not taken with Texas bees! Protect yourself, inspect during the coolest part of daylight hours, hydrate well before and after inspections, and choose safety.

"Keep the area around my hives clear." If there is a tree root, a beekeeper will trip. If there is a hole in the dirt, he will find it. It there is a fire ant mound, it will be right underfoot. If the electric fence wire lies on the ground, it will catch on a boot. If the brick that was on top of the hive is on the ground, she will hit it and fall while carrying a box of honey. Quickly check the ground six feet out from the hive before opening it. If something is in the way, move it…now.

"How can I tell if my hive swarmed?" If they truly swarmed, then you will find queen cells, usually near the bottom bar of brood frames. Yes, even a strong nucleus hive you received in April can swarm in June! However, if most of the bees are just "gone," then they probably absconded. Bees will do this when the pest load is high or the hive is contaminated in some way; they simply leave the old home and look for a new one.

"I thought I could lift deep boxes, but I can't." This is a tough one. Many NewBees aged 50 and older have this issue. The only solution is to lift a smaller load, either going to five frame deep boxes or to 8 or 10 frame medium boxes for both brood and honey. The earlier you find out you have a problem the less costly, in terms of equipment, it is to fix. Don't just "tough" it out and then end up with back surgery!

"I decided to sharpen my hive tool." Bad idea. The "sharp" straight end of the hive tool is used for prying apart frames and boxes and occasionally for scraping stuff off your bee boxes. None of these uses require a super-sharp tool. The danger is when you slip with the sharpened hive tool and potentially cut yourself through your bee gloves. The sharper the tool the more likely you are to cut the goat skin and your human skin thus risking a badly infected cut.

"I wanted to be totally organic." Well…. that depends on what you mean by organic. Strictly, no honey is organic since you do not control where the bees forage. If any non-organically grown flowers or trees are available in that two-to-three-mile radius around your hive then your honey will not pass the organic definition. If you mean, "I don't want to use 'hard' chemicals to treat varroa in my hive," then we all understand. None of us do. However, when other 'softer' methods are not effective or unusable, then either you use the hard chemical or lose your bees. This will be true until we have a genetic line of bees that are resistant, tolerant, or otherwise less affected by varroa than we have today.

"I saw this online." BE VERY CAREFUL! Please, get your beekeeping information from reliable sources, such as university websites, Extension publications, or our state apiary inspector. At worst, you will do something illegal with your bees, or even harm them. At best, you'll waste time and resources. Stick to getting advice from Texas beekeepers who really KNOW what they are doing and have proved it by MANY years of beekeeping success.

"My friend in Minnesota told me." That's nice, but all beekeeping is local. What he/she does with their bees in Minnesota frankly has little application to how we keep bees in Texas. The Texas Honey Bee Education Association has a great introductory publication focused on NewBees and how to keep bees in Texas; check it out at www.thbea.com.

"A cheap bee suit is a waste." Yep! You never know when you'll go to the bee yard for an inspection and find yourself in a rodeo, meaning the bees meet you as you enter the apiary and are all over you when you open the first hive. This is a bad time to find out if your bee suit will protect you. Get equipment that works for you, wear and use it properly, and trust it to protect you from most stings in the bee yard. In this way you can concentrate on keeping bees and not on your own personal protection or comfort.

We'd love to hear about your beekeeping adventures and your club's plans for new beekeeper training!

Roger and Sue Farr - rdfarr@gmail.com

Update from Texas Apiary Inspection Service

from Mary Reed,, Chief Apiary Inspector

Hello Texas beekeepers!

I hope you all had a wonderful summer and are gearing up for the fall and winter months that will be here all too soon. I was looking at the weather this weekend and saw that here in the Brazos Valley we will have lows in the 50s later this week! Even though I enjoy the summer and all it has to offer, I have to confess that I'm really looking forward to some cooler temperatures. Here at TAIS we are getting ready for our fall inspection season. This time of year we have several migratory beekeeping operations that come to Texas to overwinter their hives. We like to visit with these beekeepers and look through their hives to make sure their bees look healthy and are prepared for the coming months. For all of you who we won't get a chance to visit with, I encourage you to thoroughly inspect your hives over the next couple of months (if temperatures allow for it) to double check that your Varroa mite populations are low and that you aren't seeing any other signs of disease or stress. If you sample your hives and find that your mite levels are at or exceed the threshold (3 mites/100 bees OR 9 mites total per sample) then you must take steps to quickly reduce the mite population. If you aren't sure what I'm talking about, check out the informational resources available here: https://honeybeehealthcoalition.org/varroa/.

If you allow the Varroa population to remain high, then your bees most likely will not survive the winter. In addition to ensuring your bees are healthy, also check that they will have enough honey stores to consume when temperatures get cold. Depending on where you live in Texas, your bees may still be on a fall nectar flow and you may have intentions to extract that honey. If you do extract, make sure each hive will still have at least one full super of honey to use over the winter. If you don't have surplus honey frames to meet this minimum amount, then you will need to feed them sugar water (ideally a 2:1 sugar:water solution). Your bees will thank you for your efforts!

Speaking of nectar flows and feeding your bees, one of the biggest challenges in the apiary industry today is that there is often a lack of nutritional diversity available in the environment for the bees to utilize. In recent history there has been many changes in land use development which has led to shifts in the floral landscape and the availability of quality apiary locations. It's critical for beekeepers (of any operation size) to ensure that their bees have access to reliable and quality flowering resources throughout the year. Let me emphasize "throughout the year". We often get caught up in the beauty and abundance of springtime flowers. However, it's critical for bees to have access to natural resources throughout the majority of the year (ideally April – October). These resources are going to vary depending on your location, so it's important for you to learn about the typical nectar and pollen flows in your area, and what plants you can grow to provide additional support for your bees. Now, you may be asking, what if I don't know what's available in my area? How can I learn more? And what can I do to provide more nectar and pollen sources for my bees? Well, I've got several suggestions for you! I've listed below resources that you can use to first, learn about your area, and then learn how to provide and manage pollinator plantings. I hope you find these resources useful and get you excited about creating your own pollinator habitat!

- **Contact your local Extension Service office** – Most likely you have a Texas A&M Extension office for your county that has at least one horticultural extension agent. These agents are experienced professionals and researchers that have a deeper understanding of what grows in your area and can provide insight into what else you could plant to support pollinators. I strongly encourage you to reach out to your local extension agent and start using their resources today.

- **Local beekeeping association** – Another great resource to use when learning more about local flora is to connect with a beekeepers association nearby. There may be members there who are knowledgeable about the floral resources in your area and can provide insight into what the good nectar and pollen flows are and when they occur. If you are having trouble finding your local association, check out the listings provided on the Texas Beekeepers Association's website here: https://texasbeekeepers.org/local-beekeeper-associations/.

- **Xerces Society** – This is a non-profit organization focused on wildlife conservation by protecting invertebrates and their environment. Amongst the plethora of resources available on their website, the Xerces Society provides planting resources for the different regions in North America (https://www.xerces.org/pollinator-resource-center). Select your region and you will find information on creating and managing a pollinator habitat, lists of native plants best suited for the region, as well as vendors that can supply you with native seed mixes or plants for your area.

- **Conservation Blueprint** – This company is focused on building and managing pollinator habitats at any scale. Pete Burleson, the president and founder of Conservation Blueprint, has created several educational videos that cover different aspects of land management for pollinators, planting tips, as well as recordings of several webinars and presentations he has given in the past. These videos provide a helpful introduction and continuing education for planting and managing land for pollinators (http://www.conservationblueprint.com/videos/).

- **Pollinator Habitat Establishment & Management Guide** – This is a new guide developed by the Bee and Butterfly Habitat Fund to provide detailed instruction on how to create a pollinator habitat, questions to ask yourself before starting out on this endeavor, and methods of managing the land so that it continues to provide beneficial resources for pollinators year after year. The guide primarily focuses on preparing and managing land at a large scale, but the information provided can also be applied to smaller-scale projects. A free copy of the guide can be downloaded here: https://www.beeandbutterflyfund.org/habitat-guide.html.

Providing diverse flowering resources for pollinators is one of the best ways landowners, schools, businesses, etc. can support honey bees, native bees, and other pollinators. I hope these resources inspire you to either create a pollinator habitat yourself, or to at least encourage others to do so. As always, if you have any questions, please don't hesitate to reach out to our office (***tais@tamu.edu***, 979-845-9713). In the meantime, I hope you all have a safe and enjoyable fall!

Greetings from Dr. Juliana Rangel at Texas A&M University

Associate Professor of Apiculture, Department of Entomology, Texas A&M University

Dear TBA members,

I hope you are enjoying the cooler weather that we have had on and off over the last couple of weeks. We definitely have! But it doesn't mean that cooler weather does not mean slowing down. In fact, our lab has been very busy at work and will continue to be very active through the end of the year.

The Texas A&M Honey Bee Lab, Texas Beekeepers Association & Texas Honey Bee Education Association are thrilled to announce that we are only $20,000 away from our $250,000 goal! The Nevin Weaver Honey Bee Excellence Fund was established in 2009 December with a generous seed of $75,000 from the lifelong farming and beekeeping advocates John and Janice Thomas' family. Our members and supporters have contributed over $80,000, with a gift of $25,000 from Mrs. Thomas to support the present and future of Texas A&M Honey Bee Research. An anonymous donation of $50,000 was also received, bringing the fund total to $230,000.

We need your help to raise an additional $20,000 for the fund. Will you help? A small gift of $5 will provide students the opportunity to complete vital research that benefits honey bees, the beekeeping industry, and beekeepers throughout the nation. Thank you for considering joining us in the movement to save our bees through research and education.

You can make your contributions in multiple ways, both online and via check. First, the folks from the A&M Foundation have created a VERY easy way to donate online. You can select any amount, and either contribute as an individual or as a group. To make your contribution online, please visit the following website:
http://give.am/NevinHoneyBeeFund
You can also send a check payable to "Texas A&M Foundation" and write "Nevin Weaver Endowed Excellence Fund" in the subject line. You can send your contribution to:
Texas A&M Foundation
Re: Nevin Weaver Endowed Excellence Fund
401 George Bush Drive
College Station, Texas 77840

Another easy and convenient way to contribute, especially if you do not want your name to be known, is to donate through the Texas Honey Bee Education Association (THBEA) website, which has graciously created a payment link just for the Nevin Weaver Endowed Excellence Fund. They will periodically deposit collected donations into the Foundation's account. To donate via the THBEA website, simply click on the DONATE button on the following website:
https://thbea.com/nevin-weaver-endowment-fund/
You can also send a check payable to "THBEA" and write "Nevin Weaver Endowed Excellence Fund" in the subject line. You can send your contribution to:
THBEA
c/o Shirley Doggett
400 County Road 440
Thrall, TX 76578

Given these uncertain financial times, the rising costs of higher education and research, and the level of competition for obtaining grants, I feel that it is in our program's best interest to look for additional sources of funding that can help maintain and expand our research and education program. In particular, the cost of graduate education is incredibly high (about $80,000 a year per student, which includes the student's stipend, tuition, and fees) and it is critical that we find ways to supplement these costs. With my fund-raiser hat on, I am writing to as you, our beekeeper followers, supporters, and friends, to help us by donating to the Nevin Weaver Endowed Excellence Fund. Your contribution (however large or small) will help us maintain a group of graduate students and staff that can conduct all the wonderful research that you have come to appreciate over the years. I hope that you can support our cause and share the links with your beekeeping friends and family. We are VERY THANKFUL for your support.

Continuing with the series I am calling REASONS TO CELEBRATE, I want to share with you more of the multiple accomplishments of our incredible group of students and staff.

REASON TO CELEBRATE #14: Many of our students recently participated in the 24th Annual Entomology Graduate Student Forum. The Graduate Student Forum allows graduate students to practice public speaking skills and to help prepare for presenting their research during conferences. The meeting took place on Thursday, 26 August. Our students Taylor Reams, Myra Dickey and Jordan Ellis represented our lab at the event and gave excellent talks.

REASON TO CELEBRATE #15: Congratulations to Ph. D. student Jordan Twombly Ellis, who received 3rd place at the 24th Annual Entomology Graduate Student Forum. The Graduate Student Forum allows graduate students to practice public speaking skills and to help prepare for presenting their research during conferences. Her talk was titled "Determining the mechanism of honey bee (Apis mellifera) self-removal behavior as a potential social immune response." Congratulations Jordan!

I also have a few announcements regarding past and upcoming beekeeping events. I was the keynote speaker for the Hays County Beekeepers Association on Tuesday, 17 August. The meeting was held virtually and in person (I spoke via Zoom), and my presentation was titled "Ecology of Africanized Honey Bees." I also presented our research (virtually) at the monthly meeting of Greene County Beekeepers in Xenia, Ohio. The 21 September talk was about the effects of pesticides on the reproductive quality of honey bees. Here's their website: http://gcba.ohiostatebeekeepers.org/

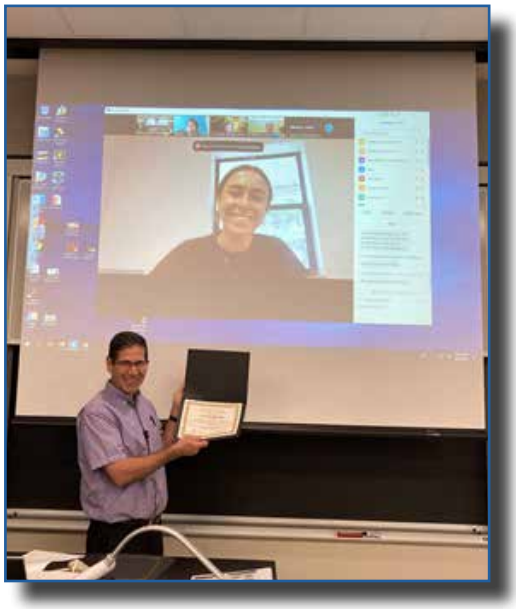
Moreover, the Rangel Lab again co-sponsored this year's Brazos Valley Beekeepers Fall Bee School. The event took place at the First Baptist Church in Bryan, TX, on Saturday, 25 September. There were classes and activities for the entire family! Classes included separate tracks in Beginning Beekeeping, Advanced Beekeeping, Beekeeping Laws, and Business Aspects of Beekeeping. From our staff, Dr. Tonya Shepherd gave a talk on Varroa biology, Jordan Ellis gave a talk on social immunity, Alex Payne gave a talk on honey bee-associated viruses, Myra Dickey talked about Africanized honey bees, and I spoke about the biology of mating. And we had a booth where people stopped by, ask questions about our program, and buy some Aggie Honey! Thanks to all participants and volunteers for a fun and insightful event, it was a great success!

The next session in the At Home Beekeeping Series will be Tuesday, September 28, from 6:30-7:30 PM CST. Our speaker this month is Auburn University's Dan Aurell. He will be speaking on the use of Varroa management tools in combination. We're offering beekeepers the chance to attend virtual meetings from the comfort of one's own home using a computer or mobile device. Speakers include university researchers and extension specialists from across the SE US as well as USDA ARS researchers. Each event will bring participants up to date on timely beekeeping topics with time for Q & A included. We also have Dr. Keith Delaplane from the University of Georgia presenting on 26 October, and our own Alex Payne from TAMU presenting on 30 November. Please help us out by sharing this info on your social media sites and sending the flyer to your partners and local beekeeping associations. Please help us out by sharing this info on your social media sites and sending the flyer to your partners and local beekeeping associations. Here is the link to the event on Facebook: https://fb.me/e/KSe55Cpn. As always, all the presentations are posted for two weeks after the live showing at the Lawrence County Extension page https://www.facebook.com/LawrenceCountyextension. Feel free to re-share this post from that site, share the event onto your Facebook sites, or create your own post with the jpg attached.

Finally, I want to let you know that our own Cade Houston from the Bee Informed Partnership, and Ph. D. Candidate Taylor Reams, M.S., will be accompanying me in presenting at the 2021 TBA Annual Convention. We will also have a booth representing our lab. So, come on down to Galveston, and say hi! Information about the Convention can be found at https://texasbeekeepers.org/annual-convention-2021/ Tickets are $125 for TBA members, $160 for non-Members, and $50 for people 17 and under. Join us on November 6th & 7th at Moody Gardens for a fun-filled weekend of educational speakers, beekeeping vendors, the Texas Honey Show, and beekeepers networking. Bring the entire family for a buzz worthy weekend adventure.

Pre-registered hotel guests will have the opportunity to purchase discounted weekend passes to Moody Gardens with unlimited access to all attractions!

That is all for now. I want to thank our followers and friends for your support. We could not do the work we do without you. Thank you, from the bottom of my heart. As always, for up-to-date information regarding our program, or for new and interesting posts regarding bees and beekeeping, please visit us on Facebook at https://www.facebook.com/TAMUhoneybeelab.



Congratulations to Rangel Lab Ph. D. student Jordan Twombly Ellis (top), who received the 3rd place award certificate from our Department Head, Dr. Phil Kaufman (bottom), at the 24th Annual Entomology Graduate Student Forum.

Rangel Lab Ph. D. students Alex Payne (left) and Myra Dickey (right) standing by our booth at the Brazos Valley Beekeepers Fall Bee School on Saturday, 25 September!

Dr. Rangel presented her work at the Greene County Beekeepers meeting on 21 September (via Zoom)

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Amazon will donate a percentage of your purchase to us
This supports the Texas Honey Queen program
and many other Educational Activities

Antenna - How Honey Bees Hear, Taste, Smell and Feel

from Ed Erwin, Certified Master Beekeeeper – University of Montana
Montgomery County Beekeepers Association

Inside a bee hive honey bees live in virtual darkness, so smell and touch are very important and critical to the communication with other honey bees within the colony. To achieve this communication, in both light and dark environments, the honey bee has evolved with two long, graceful and mobile segmented antenna attached on the sides of its forehead. Each antenna contain thousands of different sensory organs it uses for smell, touch, taste and hearing. Essentially, the antennae are a bee's major data collection tool.

The bee's antennae is a wonder of dexterity, its ability to move in any direction. In order to understand the uniqueness of the antenna, let's start at the brain and work our way out to the tip of the antenna. Each of the antennae are connected to the brain by a large double nerve to accommodate all of the crucial sensory input. Inside the antenna the nerves lead from the receptors within the antenna to the antennal lobe of the brain. Because the antenna has so many functions, the base of each antennae contains an auxiliary hemolymph pump to help pump blood through the antenna providing the nerves and muscles with extra oxygen.

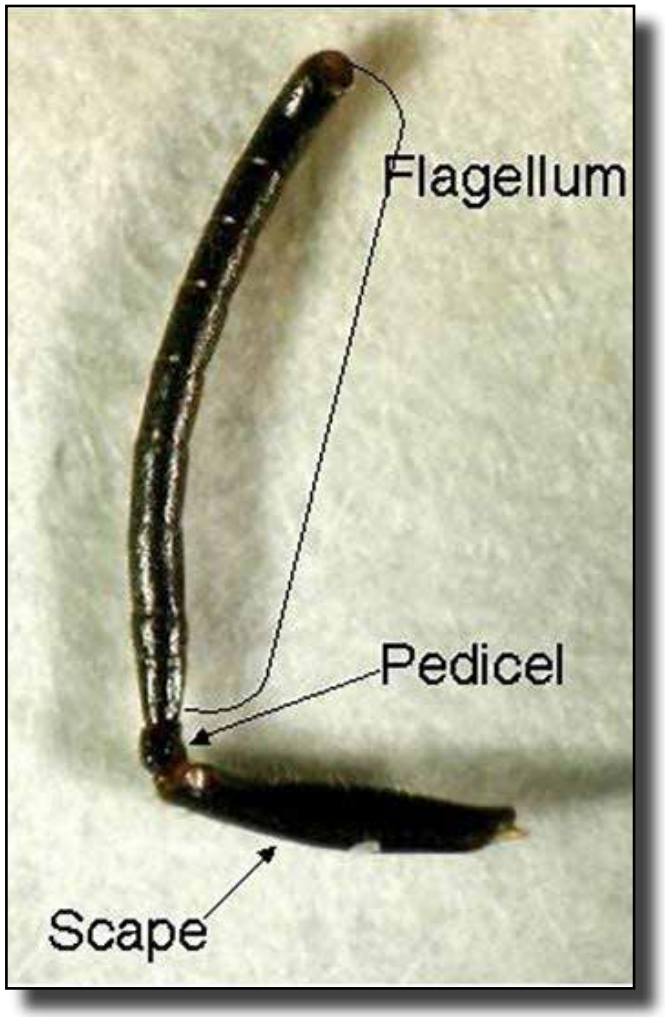
Next is the scape which is the segment attached to the honey bees head and sits in a bowl-like depression in the bee's head, sometimes called the antennal socket. The scape has four muscle attachments that allow each antennae to rotate 360 degrees.

Next comes the pedicel which is a modified flagellum that has a rounded appearance and sits on top of the scape. It has two muscles attachments allowing it to move up and down, independent of the motion of the scape.

Located, inside the pedicel, is the Johnston's organ, sometimes called the "bee's ear." Although the honey bee cannot actually hear, it uses the Johnston's organ to detect vibrations and slight changes in antennal position. The Johnston's organ can detect extremely slight deflections, even those caused by electric and magnetic fields. It's this detection that allow the bees to detect the waggle dance inside the hive. So the scape and pedical work together and are responsible for the way the antenna moves.

The last section of the antenna is called the flagellum. Both antennae, regardless of gender possess a Flagellum, Pedicel and a Scape. There are 11 separate flagellum segments in the female antennae and 12 in the male. The male's segments are much longer than the female's, giving him a noticeably longer antenna. They are not true segments as they have no independent musculature, but each of the flagellum contain thousands of sensory organs of 3 different types.

The most important sensory organ is the peg organs. Each antenna has thousands of the tiny chemoreceptors and are used for smelling (like a nose). It is estimated that worker bee antenna have



approximately 3,000 chemoreceptors, queens only about 1,600. Drones have approximately 300,000 in order to find virgin queens during flight at a Drone Congregation Area.

Another major olfactory sensor is known as pore plats. They are located on the last eight segments of the flagellum. The honey bee's sense of smell is so sensitive that it can detect a trace of a scent and sometimes even the direction of the scent - even in flight. This ability equips the bee to effectively and efficiently locate nectar and pollen-rich flowers.

Plate organs are another type of organ on the flagellum. Some evidence suggests they are used as chemoreceptors and photoreceptors, but the experts are not even sure what they do, so they may be used for smell or sensing light

Once the scent is detected on the flagellum, the bee's hyper-sensitive olfactory path processes the information, enabling the bee to determine the relevance of the scent to her search for resources. In addition to finding food, honey bees use their sense of smell to locate other worker bees, drones, queen cells, eggs, younger and older larvae, over-ripe larvae, pollen, unrefined and mature honey, wax and propolis. Other duties of the honey bee that require their sense of smell in order to collect information needed for the social structure of the entire colony and the bees survival. Gustatory sensors, are thread-like chemoreceptors and can detect sucrose concentrations as low as two percent.

The honey bee flagellum is a sensitive movement detector. Additionally, the neurons have the ability to preserve both frequency and temporal information of acoustic stimuli including the "waggle dance" movement. The response of neurons has been found to be age-dependent, demonstrating that the dance communication is only possible between mature foragers. Also the last six segments of the flagellum can detect temperature, humidity, carbon dioxide, gravity, shape, wind speed and their flight speed.

The worker honey bee has a tuft of sensory hairs on the tip of the flagellum which is used to determine the texture of a surface. Their hairs are highly useful for making sense of the world around them. These sensory hairs serve as mechanoreceptors used for tactical functions and possibly respond to sound waves. Understanding the function and purposes of the honey bee antenna will help the beekeeper better understand bee behavior.

Texas A&M, Department of Entomology

from Tonya Shepherd, Senior Research Associate

Hello! I am Tonya Shepherd, PhD, and I am a Senior Research Associate working in Dr. Juliana Rangel's Honey Bee Lab at Texas A&M University. The lab is located in the Department of Entomology in College Station, TX. I also work at the research apiary located at the Janice and John G. Thomas Honey Bee Facility on the RELLIS Campus in Bryan, TX. I help manage the molecular side of the Honey Bee Lab by making sure it is safety compliant, training students on techniques and safety procedures, and providing input in experimental design on papers and grants. I also help secure reagents and tools necessary for much of the molecular work.

My most common type of research project includes mitotyping honey bees. Mitotyping is a process used to determine the lineage based off of mitochondrial DNA sequence. Mitochondria, the organelles important for ATP synthesis in a cell, also contain its own DNA. Mitochondria are almost exclusively inherited from the maternal side. Therefore, all honey bee workers descended from the same queen will have the same mitochondrial DNA. For mitotyping, colonies are sampled by collecting several workers and keeping them in a solution of 65-70% isopropanol. Generally, workers are from the same colony and all have the same queen mother, so they should have identical mitotypes; but we collect more individuals than we need to account for the occasional drifter bee. After bringing back the samples to the molecular lab, DNA is extracted from tissue samples and is the source material to perform polymerase chain reactions (PCR). We amplify a region in the mitochondrial DNA that is important for differentiating lineages among bees. The PCR products are sent off to a sequencing facility, and in return, I receive DNA sequences as a computer file. I compare these sequences to a national database of different honey bee genomes and lineages to identify the lineage of that worker, and thus, the lineage of the colony. This technique not only determines if a bee is Africanized (A lineage) or European (C or M lineage), but can even give me more information such as what type of A or C or M lineage the colony belongs to (such as A1 or C1).

Aside from molecular work, I am also a senior lecturer in the department. I teach Honey Bee Biology (ENTO 320) in the Fall semesters and teach the same course online in the Spring and Summer semesters. As if that doesn't keep me busy enough, I am an adjunct faculty for a local community college (Blinn College), where I teach Introduction to Biology and Introduction to Microbiology to undergraduate students. Wait—what does microbiology have to do with honey bees? Before coming to Texas to pursue a doctorate, I grew up in southern Indiana. I received a BS degree in Biochemistry from the University of Evansville. After graduating, I moved directly into a doctorate program at the College of Medicine, which at the time, was part of the Texas A&M Health Science Center. I worked in the Microbial Pathogenesis and Immunology Department, focusing research on Mycobacterium tuberculosis, the causative agent of tuberculosis (TB). I often joke "I went from studying TB to Honey Bee!"

Joining Dr. Rangel's lab in 2017 and learning a whole new model organism and field was challenging but exciting! In fact, very recently, I went on my first field trip collecting bees from feral colonies at the Welder Wildlife Refuge in Sinton, TX. Students asked if I ever did field research before, to which I replied "No, it's frowned upon to actively seek pathogens in the field!" Despite the shift in research focus, the techniques and research training translated well, which was what was needed of me. In fact, I'm currently working on a project looking at developing a technique to quickly quantify Nosema spores, a microsporidian honey bee gut pathogen—a marriage of my background and current field.

I look forward to more exciting honey bee research, but I also look forward to meeting many new beekeepers and learning the practical side of beekeeping too!

Dr. Shepherd presenting our research at the T3 research conference, Texas A&M University

Dr. Shepherd at the research apiary checking out our bees!

Pheromones - Communication Without Sound

from Ed Erwin, Certified Master Beekeeeper – University of Montana
Montgomery County Beekeepers Association

Beekeepers know that pheromones are the key to controlling all activities of the bees in the beehive. The word pheromone comes from the ancient Greek word phero, which means "to bear" and hormone. Pheromones of the honey bee are a variety of chemical substance mixtures in varying percentages produced by the individual bee. The array of chemical compounds are released by 15 different glands located in different parts of the body. Each chemical pheromone is different and when excreted or secreted, they trigger responses from other bees.

These discharges are either a releaser pheromone, which have a short term effect with almost immediate behavioral response from the receiving bee, or a primer pheromone with long term effects which change the physiology and behavior of the recipient.

Pheromones are initially produced in a liquid form and transmitted to the other bees in the liquid form or as a vapor. Depending on the pheromone, they are either produced as volatile or non-volatile. The chemical messages are received principally on the bee's 170 odor receptors (chemoreceptors) located on the antenna and other body parts, such as the feet.

The honey bee pheromone communication is one of the most complex and effective among insects. The worker honey bee is known to transmit over eight, which include: Alarm; Brood recognition; Drone; Dufour's gland; Egg marking; Footprint; Forager; Nasonov and a few others. The queen honey bee produces a few of her own pheromones which include the Queen mandibular and Queen retinue.

Pheromones are the key factor in the way the queen, workers and drones communicate and coordinate the complex activities within the hive. They are important to all types of activities including foraging for resources, wax foundation construction, defending the hive, new queen development and swarming. Here are some of the key pheromones:

Alarm pheromone

When a honey bee stings another animal it releases alarm pheromones which signals other bees to become defensive and attack the sting location. Two main alarm pheromones have been identified in honey bee workers.

The Koschevnikov gland is located near the sting shaft and releases an alarm pheromone when a bee stings. This pheromone is made up of over forty highly volatile chemical compounds. When released, this pheromone attracts other bees to the sting location and all the bees begin defending the colony. The alarm pheromone smells like bananas.

The other alarm pheromone is released by the mandibular glands located on the head and can be a highly volatile substance. When honey bees are in their foraging stage (older worker honey bees) the mandibular glands produce an alarm pheromone. When the worker bees are younger and performing nursing tasks they produce a nutritional secretion called royal jelly from the mandibular gland, which along with pollen and honey is fed to larvae. If a larvae is fed only royal jelly the larvae will develop into a queen.

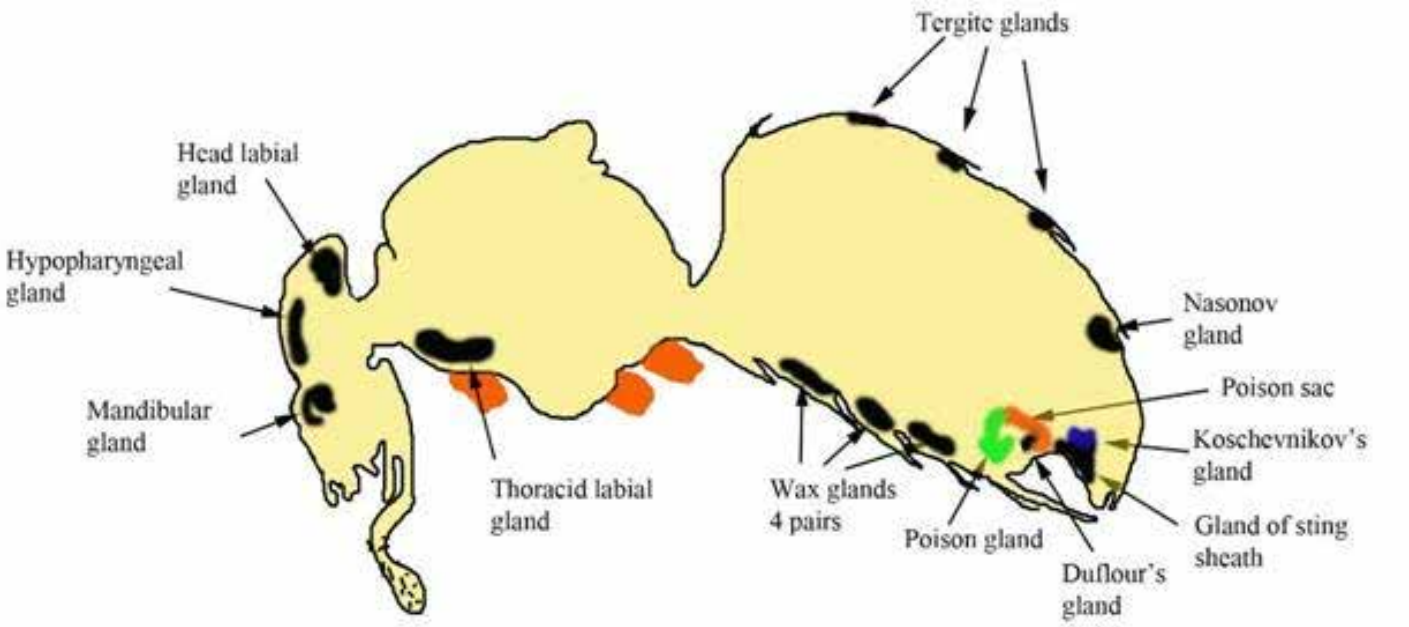
Smoke can mask the bees' alarm pheromone.

Brood Recognition Pheromone

When the bee colony is raising larvae and pupae they emit a brood recognition pheromone from their larval salivary glands. This pheromone acts both as a primer and releaser. Brood cannot survive without the constant care and feeding of nurse bees. This pheromone also helps nurse bees differentiate between female worker bee and drone larvae and pupae development. When it is time for the developing pupae to develop a cocoon the silk for the cocoon is produced from the salivary glands. This pheromone also hinders worker bees ovarian development and prevents worker bees from bearing offspring.

Drone pheromone

In the spring the queen begins the production



Honey Bee Glands

of drone (male) bees from unfertilized eggs whose purpose is to mate with virgin queens from other hives. Drone bees produce and emit a pheromone from their mandibular gland to attract other drones to the drone congregation area (DCA) to mate with virgin queens. It is also believed that the virgin queens follow this pheromone scent when locating the drone congregation area. The drones are generally concentrated in area between 100 to 770 feet in diameter and 50 to 130 feet above the ground.

Egg Marking and Dufour's pheromone

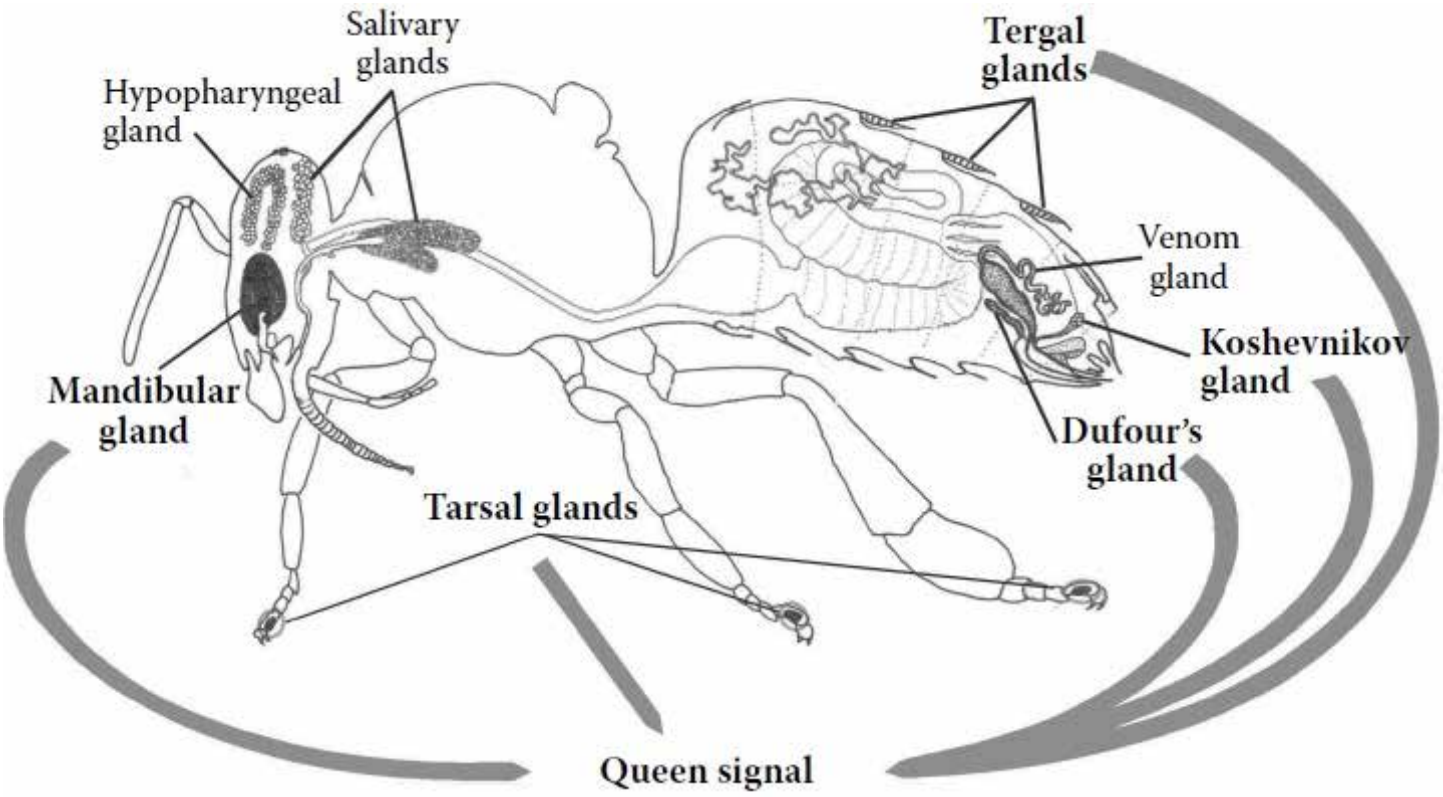
The queen produces the egg marking pheromone that has several chemical compounds unique to the queen. Because both the queen and workers can lay eggs these compounds allow workers to differentiate between eggs not deposited by the queen and they will destroy the eggs without the marking pheromone. It is believed that the egg marking pheromone is associated with the Dufour's gland. The Dufour's gland opens into the dorsal vaginal wall and is named after the French naturalist Léon Marie Dufour. This pheromone is composed of 24 different alkaline chemicals and lets the workers know when the colony is "queenright" or if the colony is queenless.

Tarsal Pheromone

Also known as the footprint pheromone and trail pheromone, the tarsal pheromone is an oily, colorless, chemical secretion, with a low volatility. It is deposited by queens, workers and drones as they walk on surfaces. The pheromone glands are located on the 5th tarsomere of the all six legs. Queens secrete 12 compounds, workers 11 and drones 1. This attractive order affects the behavior of other workers, particularly in locating the hive entrance, nectar and other food sources. When bees are standing at the entrance of the hive with their abdomens raised and fanning their wings they are helping returning foraging bees in orientation and location of the hive. As the queen walks on the comb she deposits her tarsal pheromone which inhibits queen cell construction and therefore less motivation for the bees to swarm.

Queen Signal

The queen honey bee controls the main colony functions by means of a complex chemical blend of pheromones produced by different glands known as "queen signal". This signal is a primer pheromone causing behavioral modifications in the worker bees and establishes social hierarchy and preserves the



Queen Signal Glands

queens dominance in producing offspring for the hive. The queen signal is consistent and if it decreases, or is absent, the worker bees will begin feeding larvae royal jelly within 24 hours in order to produce a new queen for the hive.

Amazingly, the communication within the hive is conducted by the emittance and receipt of pheromones – all done in the dark.

Texas Honey Bee Education Association Fund Raiser

Most of our TBA Members are aware of how the Texas Honey Queen Program is financed. At the Convention each year, interested members bring beekeeping related items to be auctioned off, with the proceeds providing the funds to keep your Honey Queen and other THBEA Program going. This has proven to be a fun time at the Awards Dinner with many members having the opportunity to contribute to one of the best programs of any state.

Texas has had much success in providing very strong competitors in the selection for the American Honey Queen. It would not be so without your support. Your funds provide the ability for the Texas Honey Queen to travel extensively in Texas promoting honey. Most of our Queens travel 4,000 to 6,000 miles each year in the State of Texas and make presentations nearly every week.

This strong promotional schedule provides a good training ground and the opportunity for many local clubs and individual beekeepers to have first class promotional help with their only cost being the hosting of the Queen.

Your help is needed. With the continued increase in the cost of motor fuel and increased airfares, the travel budget gets tighter. If you are planning to attend the Annual Convention in Galveston, November 5th - 7th, please bring a special beekeeping related item to contribute to the auction.

Bring your pocketbook also to bid on an item or two donated by someone else. If you are unable to attend, please send a contribution to the Treasurer, c/o Shirley Doggett for the Honey Queen Program. It will be very much appreciated.

The Texas Honey Bee Education Association (THBEA) is proud to introduce a great new way for Texans to support education and research programs dedicated to preserving and protecting honey bees. The new THBEA "Love Honey Bees" license plate is now available for sale online and in county tax assessor offices where license plates are sold and renewed across the state.

For every license plate purchased, $22 will go to the THBEA for youth and beekeeper education programs, information resources for farmers and the general public, and research programs to improve honey bee health and longevity.

Order On-Line at:

https://www.myplates.com/design/background/passenger/love-honey-bees

Listing of Local Beekeepers' Associations in Texas with TBA Delegate and Regular Meeting Information Shown for Each

Please forward any changes and/or additions to
Leesa Hyder, Executive Secretary, *execsec@texasbeekeepers.org*

Alamo Area Beekeepers Association
Rick Fink - (210) 872-4569
president@alamobees.org
www.alamobees.org
Meetings: 3rd Tuesday on odd # months
Helotes Ind. Baptist Church
15335 Bandera Rd., Helotes at 7 pm

Austin Area Beekeepers Association
Dodie Stillman - (512) 560-7550
austinareabeekeepers@gmail.com
facebook.com/groups/Austin/AreaBeekeeperAssociation
www.meetup.com/Austin-Urban-Beekeeping/.
Meeting: 3rd Monday of each month at 7pm
Frank Fickett Scout Training and Service Center
12500 N I-35, Near Parmer Lane, Austin

Bees in the East Club
Mark de Kiewiet (210) 863-8024
beesintheeast@att.net
Meetings 4th Saturday of each month at 10am
Water Garden Gems, 3230 Bolton Road, Marion,

Bell/Coryell Beekeepers Association
Charles McMaster (703) 624-1337
bellcoryellbeeclub@gmail.com
Meetings: 3rd Tuesday of each month (except December) at
Refuge Ministries, 2602 S. FM 116, Copperas Cove - 7pm

Big Country Beekeepers Association
Ken Hobbs - (325) 665-4045
paniolobee@icloud.com
Meetings: 3rd Tuesday of each month except December at 6:30pm
1502 South Treadway Blvd, Suite B
Abilene

Blanco County Beekeepers Association
Teri Albright - (512) 636-9900
blancocountybeekeepers@gmail.com
Meetings: 3rd Thursday of each month at 6:30 pm
Blanco County Annex South, 402 Blanco Rd., Blanco

Brazoria County Beekeepers Association
Steve Brackmann - (832) 884-6141
stevenbrackmann@yahoo.com
bcba@brazoria-county-beekeepers-association.com
www.brazoria-county-beekeepers-association.com
Meetings: 2nd Monday of each month
Brazoria County Extension Office, 21017 CR 171, Angleton at 6:45 pm

Brazos Valley Beekeepers Association
Nathan Krueger - (979) 324-1160
info@bvbeeks.org
www.bvbeeks.org
Meetings: 3rd. Tuesday of each month (except Dec.)
First Christian Church, 900 S Ennis St., Bryan from 6pm

Caddo Trace Beekeepers Association
Terry Wright - (903) 856-8005
tcwright7021@yahoo.com
Meetings: 2nd Monday of each month
Titus County Agrilife Ext. Bldg., 1708 Industrial Rd., Mount Pleasant at 7 pm

Caprock Beekeepers Association
Victoria Watts - (806) 392-2355
mystique175@att.net
Meetings: 3rd Thursday of each month at 6:30 pm
Freeway Bible Chapel, 5507 Marsha Sharp Freeway, Lubbock 79407

Central Texas Beekeepers Association
Michael Kelling - (979) 277-0411
CentralTexasBeekeepers@gmail.com
www.centraltexasbeekeepers.org
Meetings: Monthly on the 4th Thursday (except November and December) Washington County Fairgrounds, 1305 E Bluebell Rd., Brenham at 7pm

Chisholm Trail Beekeepers
Scott Zirger (682) 385-0008 or (510) 301-5796 (cell)
scott@zirger.us or *chisholm-trail-beekeepers@googlegroups.com*
Meetings: Last Monday of each month
Burleson Bible Church, 260 South Hurst Road,Burleson

Collin County Hobby Beekeepers Assn.
John (Skip) Talbert (706) 761-7893
president@cchba.org
www.cchba.org
Meetings: 2nd Monday of each month at 6:30 pm
Collin College Conference Center, (Central Park Campus)
2400 CommunityDr. , McKinney

Colorado County Beekeepers Association
David Behlen (832) 230-5740
coloradocountybeekeepers@gmail.com
Meetings: 2nd Thursday of each month at 6:00 pm
316 Spring Street, Columbus

Comal County Beekeepers Association
Julie Morgan - (210) 475-2924
e.julie.morgan@gmail.com
Meetings: 1st Thursday of each month
Beefy's on the Green Restaurant, upstairs room
12910 USHwy 281N at 6:30 pm

Concho Valley Beekeepers Association
Rex Moody - (325) 650-6360
cvbeekeeper@gmail.com
Meetings: 3rd Tuesday of each month Jan-Nov at 6:30 pm
Texas A&M res. & Ext. Center, 7887 US Hwy 87 N, San Angelo

Deep East Texas Beekeepers Association
Ellen Reeder - (337) 499-6826
ellenswartz@sbcglobal.net
San Augustine Chamber of Commersce Building
611 West Columbia Dt., San Augustine

Denton County Beekeepers Association
Gary Barber - (972) 768-5505
board@dentonbees.com
www.dentonbees.com
Meetings: 2nd Tuesday of each month at 6:30 pm
Please see club website for location

Dino-Beekeepers Association
Chip Hough (817) 559-0564
dino-beeclub@hotmail.com
www.dino-bee.com
Meetings: 2nd Tuesday of month at 6:30 pm
Glen Rose Citizens Center, 209 SW Barnard St., Glen Rose

East Texas Beekeepers Association
Richard Counts - (903) 566-6789
dick.counts4450@gmail.com
www.etba.info
Meetings: 1st Thursday of each month at 6:45 pm;
Whitehouse Methodist Ch., 405 W Main (Hwy 346), Whitehouse

Elgin Area Beekeepers Association
Jerry Lee - (917) 710-6072
president@elginareabeekeepers.org
Meetings: 2nd Tuesday of the month at 7 pm
Various Locations

Elm Fork Beekeepers Association
Jan Hodson - (940) 637-2702
janrhodson@gmail.com
Meetings: 3rd Thursday of each month
The VFW Hall, 3332 North Grand Ave, Gainesville

Fayette County Beekeepers Association
Mike Mathews (713) 805-9673
mmathews324@gmail.com
Meetings: First Saturday of the month, Feb, April,
June, August, October and December at 5 pm
Fayette County Ag. Bldg., 240 Svoboda Ln., La Grange

Fort Bend Beekeepers Association
Lynne Jones - (713) 304-8880
info@fortbendbeekeepers.org
Meetings: 2nd Tuesday of each month (except December) at 7:30 pm
Long Acres Ranch Visitor Center, 2335 Richmond Pkwy, (then turn onto Circle Seven Dr.) Richmond TX 77469

Harris County Beekeepers Association
Jim Orr - (713) 213-7080
rjfarmandapiary@gmail.com
www.harriscountybeekeepers.org
Meetings: 4th Tuesday of each month at 7pm
Golden Acres Center, 5001 Oak Ave., Pasadena

Hays County Beekeepers Association
Nathalie Misserey (512) 699-0605
hayscountyba@gmail.com
Meetings: 3rd Wednesday of each month at
Vista Brewing, 13551 FM 150, Austin, TX 78737 at 6:30pm

Heart of Texas Beekeepers Association
Gary Bowles (254) 214-4514
gm.bowles@yahoo.com
Meetings: 4th Tuesday of each month (except Dec.) at 7 pm
Contact club to confirm meeting location

Henderson County Beekeepers Association
Kathi Murphy-Boley (972) 467-5092
kdbmurphy@gmail.com
Meetings: 3rd Thursday of the month at 6:00 pm
Faith Fellowship Church, 5330 Highway 175, Athens, TX 75762

Hill County Beekeepers Association
Robin Sliva - (254) 205-0534
rs.plumleeplace@gmail.com
Meetings: 3rd Tuesday of the month at 6:30 pm
Hill County Courthouse Annex, 126 S Covington St., Hillsboro

Hopkins County Beekeepers Association
Jon Dalzell - Secretary, (214) 395-1730
dalzelljon@aol.com
Meetings: 3rd Thursday of the month at 6:30 pm
Hopkins County Agrilife Bldg., 1200 W Houston St., Sulphur Springs

Houston Beekeepers Association
Sandi Murray (713) 594-9273
info@houstonbeekeepers.org
www.houstonbeekeepers.org
Meetings: 3rd Tuesday of each month at 7:00 pm
5200 Montrose Blvd.,Houston TX 77006

Houston Natural Beekeepers Association
Dean Cook
houstonnaturalbeekeepers@gmail.com
Meetings: Second Saturday of the month at 10 am
4466 Billy Street, Houston TX 77020

Johnson County Beekeepers Association
Bruce Watts, Jr. - (817) 992-2294
bruce.jr@sbcglobal.net
Meetings: 2nd Tuesday of each month at 6:30 pm
2099 W FM 917, Joshua

Kaufman Area Beekeepers Association
John Guthrie - (214) 686-8585
kaufmanbeekeepers@gmail.com
Meetings: 2nd Tuesday of each month at 6:30 pm
Kaufman United Methodist Church, 208 S Houston St, Kaufman

Lamar County Beekeepers Association
Randall Childres - (903) 249-9105
lamarcoba@gmail.com
Meetings: 1st Thursday of the month at 6:30 pm
Lamar County Fairgrounds, Bldg B, 570 E Center St., Paris

Longview Beekeepers Association
Myra Smith (903) 639-2910
Meetings: 1st Tuesday of each month at 6 pm
Texas Agrilife Extension Office, 405 E Marshall St., Longview

Marshall Beekeeping Association
Beth Derr - (936) 591-2399
marshallbeekeeping@gmail.com
Meetings: 2nd Thursday of each month at 5:30 pm
Cumberland Presbyterian Church. 501 Indian Springs Dr., Marshall

Montgomery County Beekeepers Assn.
Andy Knight - (281) 305-4072
mocobees@gmail.com
www.mocobees.com
Meetings: 3rd Monday of each month at 6:30 pm
Montgomery County Extension Office, Tom Leroy Education Bldg., 9020 Airport Road, Conroe

Northeast Texas Beekeepers Association
Rebecca Vaughan - (972) 841-3751
contactnetba@gmail.com
netbacantontexas@outlook.com
Meetings: 2nd Monday of each month at 6:00 pm
Canton Baptist Church, 303 South Athens St.,
Canton, TX 75103

Palo Duro Bee Club
Paige Nester - (806) 678-8048
nesterpaige@gmail.com
Meetings: 1st Thursday of each month
Creek House Honey Farm, 5015 4th Ave, Canyon

Pineywoods Beekeepers Association
Terry McFall - (409) 289-7387
tdmcfall@hotmail.com
Meetings: 3rd Thursday of each month at 6:30 pm
Lufkin/Angelina County Chamber of Commerce
1615 S Chestnut St. Lufkin (just off Loop 287)

Red River Valley Beekeepers Assn.
Larry Roderick (940) 237-2814
roderickwaterwells@gmail.com
Meetings: 3rd Tuesday of each month (except December) at 7pm
Bolin Science Hall Room 209, Mid West State University,
310 Taft Blvd., Wichita Falls

Rusk County Beekeepers Association
John Stewart - (903) 842-4433
jes.stewart@gmail.com
Meetings: Last Thursday of each month at 6 pm
Church of the Nazarene, 906 W Main St, Henderson

San Marcos Area Bee Wranglers
Gay Fraser (512) 264-2021
smabeewranglers@gmail.com
Meetings: 2nd Thursday of the month 7:00 pm - 9:15 pm
Extra Meetings: 4th Thursday of the month, March, April, May 7:00pm
Pecan Park Riverside RV Park, 50 Squirrel Run, San Marcos

Temple Area Beekeepers Association
Jim Billings (254) 760-2053
holly21351@aol.com
Meetings: 2nd Thursday of each month at 7pm
Troy Community Center, 201 East Main Street, Troy

Texarkana Beekeepers Association
Sarah Clinesmith - (903) 277-2145
sarahaddie@aol.com
Meetings: 3rd Monday of each month at 6pm
Texarkana Public Library, 600 W 3rd St Texarkana

Texas Hill Country Beekeepers Association
Linda Williams - (830) 688-0560
texashillcountrybeekeepers@gmail.com
facebook.com/TXHillCountryBKAssn/
Meetings: 4th Tuesday of odd months at 6:30 pm
Hill Country Veterans Center, 411 Meadow View lane, Kerrville TX 78028

Travis County Beekeepers Assn.
Tanya Phillips - (512) 560-3732
traviscountybeekeepers@gmail.com
www.TravisCountyBeekeepers.org
https://www.facebook.com/groups/TravisBeeks/
Meetings: First Monday of the month at 7 pm
Zilker Botanical Gdns., 2220 Barton Springs Rd., Austin

Tri County Beekeepers Association
Erin Davis - (903) 389-3436
erin.davis@ag.tamu.edu
Meetings: 4th Tuesday of each month at 5:30pm
Sam's Restaurant, Fairfield, TX

Tyler County Bee Club
Scott Martin - (409) 283-4507
tcbclub16@gmail.com
Meetings: 4th Tuesday of each month at 6 pm
Nutrition Center, 201 Veterans Way, Woodville

Walker County Area Beekeepers Assn.
Larry Fuchs - (936) 661-0633
walkercountybeekeepers@gmail.com
Meetings: Last Thursday of each month at 7 pm (not Nov or Dec)
Walker Education Center, 1402 19th St., Huntsville

Williamson County Area Beekeepers Assn.
Gillian Mattinson - (512) 961-9955
gillmatties@gmail.com www.wcaba.org
Meetings: 4th Tuesday of each month at 7 pm (except December)
Georgetown Public Library, 402 W 8th St., Georgetown

Wise Texas Bee Club
Donny Johns - (817) 939-3249
info@wisetexasbeeclub.org
Meetings: First Thursday of the month at 6pm
Public Library, Bridgeport

Wood County Beekeepers Association
Bill Zimmer - (469) 222-3901
woodcountybeekeepers@gmail.com
Meetings: First Tuesday of every month at 7 pm
WinnsboroCivic Center, Hope Ln, Winnsboro

Directors -at-Large

Area 1

Dodie Stillman
stillmandodie@gmail.com
1602 Blanchard Drive
Round Rock, TX 78681
(512) 560-7550

Area 2

Robin Young
robinyng@pwhome.com
13737 FM 1171
Northlake, TX 76262
(940) 765-2907

Area 3

Charlie Agar
charles_agar@yahoo.com
861 Twin Oaks Drive
New Braunfels, TX 78130
(803) 708-8797

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Picture from Kirk Kirksey