



Radicalize the Hive

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ANGELA ROELL

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Contents

Copyright and License	vii
About Ang Roell	ix
Personal Principles	xvii
Gratitude and Acknowledgements	xxi
How to Use This Book	xxiv
Introduction	1
Part 1: A Radicalize the Hive Manifesto	7
Part 2: Interviews From the Field	36
My experience at WSU	38
Melanie Kirby	40
Antonio Rafael: Beekeeping to Reconnect to the Land & Indigeneity	44
Brian Peterson-Roest: Bringing Beekeeping into the Light	48
Danielle Bender: Beekeeping, An Artistic, Accessible Approach	51
Julia Common: Apiculture to Community Culture	55
Sarah Red-Laird: Beekeeping as Part of the Bigger Picture: Agriculture and Apiculture	58
Kristy Lynn Allen: Carving a Different Path in Beekeeping	62
The Bee Squad: Partnerships in Beekeeping	65

Stacey Vazquez: Beekeeping as a Family (& Urban) Affair	68
Timothy Jackson: Finding the Light, not Blight: Turning Vacant Lots into Bee Farms	73
Eliese Watson: Inclusivity and Room to Grow in Beekeeping	77
Alwyn "Oxx" Simeina: For the Love of Raw Honey	82
Jasmine Joy: The Mindfulness of Beekeeping	85
Kirk Webster: Looking "Organically" at the Broader Landscape of Bee Health	89
Michael Palmer: Queen Rearing and Other Advice for New Beekeepers	93
Part 3: Tools and Resources for New Beekeepers	96
Hive Inspection Sheet	98
Hive Management Journal	101
Apiary Action Plan	105
Wintering Honey Bees	117
End of Year Beekeeping Evaluation	119
The Beekeeper's Year	121
Resource List	122
Graft-Free Queen Rearing by Morris Ostrofsky	127
Appendix A: Honeycomb Map	157
Appendix B: Historical References	159
Glossary of Terms	170
	178

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About Ang Roell



Figure II.1 Ang Roell

A Brief History of Me

I think to understand where we are and how our intersecting identities impact our experience, we have to be willing to take a critical lens to ourselves and our shared history, so we can discover the layered complexity of ourselves and our shared experience. To frame the context of this text, I think it's important to understand what my perspective is. I write from the perspective of a person born and raised in the so-

called United States. I am a white person, of Ukrainian and German heritage predominantly and hold Portuguese, French and Irish heritage. I am a nonbinary person. I use they/them/theirs pronouns. I am a queer pansexual person full of abundant love in many forms.

I am a descendant of wage workers. Because of this, workers' movements rooted in collaborative resistance have always been compelling to me. A strong work ethic was instilled in me from my working lineage. At the same time, I bore witness to worker "burnout" and workers pitted against each other to benefit the extractive bosses, companies and the capitalist system. Though I was raised working class, I was able to save money and attend both college and graduate school, earning

educational privilege in the process. That privilege gave me permission to question the relationship between workers and the system in which they work. It instilled in me an aspiration to run my own business, built on my values. That led me on a journey of exploration and self discovery. The work journey took me across oceans on solar powered sail boats, into kitchens, bars and classrooms and onto farms as I worked for small businesses across the US and the world. On that journey, I discovered what my values are and how I can align them with my work in the world.

Today I live in a community very different than the one I grew up in, but this community is similar to communities my great-grandparents were a part of when they migrated to this country. I currently experience the privilege of being partnered with someone who holds intergenerational wealth and middle-class privilege. I don't have the privilege of emotional connection to my own family.

I do come from a lineage of women who have intuitive dreams and/or visions. I have these dreams/visions. These dreams inform and define how I make decisions in the world.

My Journey: Where I come from and how I got here

I was raised in Queens, New York in a small apartment in a part of Flushing called College Point. The first farm animal I saw was a sweet old spotted dairy cow on a class field trip at the Queens Zoo. I was so excited to see this magnificent creature. I stood behind her as close as I could get — and she shit all over me. I had to walk around for the remainder of the field trip covered in cow shit. It didn't deter me from my love of animals and my desire to engage in animal husbandry. I pored over books and media about wild and domestic animals. I worked at that same Queens Zoo as a teen, and I kept the fire burning for a deep connection with the natural world.



Figure II.2 A raw honeycomb

My ancestors were Ukrainian, but they would describe themselves as Slavic. They came from people who lived in what is present day Ukraine. But poverty, forced migration and war tore their homeland apart. Slavic people hold a deep relationship with honey bees. The traditions and territories of beekeeping in Slavic culture is passed down from generation to generation.

As a young child, I had the privilege of a deep relationship with my Ukrainian great grandfather and his daughter, my grandmother. They taught me about dream divination and fed my fiery spirit with stories of Slavic people — bees were a consistent theme in these stories.

My grandmother, Constance Marie, who I affectionately called Connie, sparked my love of food, ritual and the natural world. She used food to bridge her Ukrainian traditions with the Italian, French and contemporary “American” cooking she learned from her friends in the United States. She spent hours in her kitchen crafting recipes that married her own traditions

with those of the French and Italian chefs she admired. She shared these practices along with a side of Ukrainian folklore and mysticism.

As a Ukrainian transplant living in New York City, Connie raised rabbits on rooftops, holding on to her agrarian roots. Animal husbandry was her connection to the mystical traditions of her people. Ever the storyteller, she loved to share stories in her tiny kitchen in College Point, New York. She was, throughout her life, one of my tethers to history and family across the Atlantic Ocean. She lived in a neighborhood tucked up against a large park where, amidst the trees, she could pretend she was somewhere in the countryside. She taught me to appreciate trees, birds and the natural world in her backyard.

Together we cooked — she cooked. I sat in her kitchen eating all of the freshest vegetables and helping out from time to time. She was a proud woman. She was proud of her Ukrainian history, her well-traveled, hard earned middle-class experience and her skills as a chef. She loved to tell stories about all of these things. She'd share about her time in the small mill town of Woonsocket, Rhode Island and her adventures in urban rabbit rearing. She was also a dreamer. She dreamt about the future, and she often told me about her dreams and her interpretations of them. She always encouraged me to listen to my dreams. As a young person, I assumed this meant “follow your dreams” in that cliché way elders are supposed to encourage us. As I grew older, I realized the women in my family shared this unique gift. Via our dreams, we received messages, ideas and inspiration for the future. When my grandmother told me to “follow my dreams,” she was actually saying “*trust in your magic.*”

She was the quiet voice of encouragement for the wild dreams and spirit of my early adulthood. I first worked in kitchens and bars, preparing foods and mixing cocktails while I worked my way through college. Through a bit of research,

charm, dumb luck and privilege, I scored a gig on a solar-powered sailboat. I learned how to sail and cook on the open sea. I quickly tired of being queasy *all the time*, so from there I moved onto land and went from kitchens to community gardens, neighborhood lot reclamation projects to small farms across the US, all before relocating to the Northeastern US, where my ancestors once migrated.

At the end of her life, true with the spit fire of any strong Ukrainian woman, my grandmother's dying wish was that I "take big risks."

Bees came to me through a slow remembering, of stories, tales and dreams. First, I learned I was lucky, then I realized I was privileged. Then I remembered I held magic inside of me. The magic of ancestors, the magic of healing and the magic of having a decade long relationship with honey bees all built on research, cultivation and relationship building.

I've said magic a few times here, and maybe that makes you nervous. You don't have to believe in magic to read this text. This text can still be for you if you're not knowingly connected to ancestral healing or communication, if you don't intentionally engage in ritual or ceremonial celebration of your lineage or history. We all have expressions of joy and spirituality that keep us grounded. We all have belief systems that help guide our work in the world. Yours and mine do not have to be the same for you to find value here.

What matters to me is that you are curious about our collective liberation, not just as a species, but as a collective ecosystem on our shared planet. What matters to me is that you are willing to explore how our collective liberation depends not just on our relationships to one another across race, class, gender, age and ability, but also our relationship to the natural world, and to the movements and rhythms of the ecosystems around us. What matters is that you are willing to accept that we are, each of us, nested in this rapidly changing system and no amount of money or privilege or even magic is going to save

us from the collective suffering we're moving towards in the current climate crisis. Together, we have to learn to adapt.

Within these pages, I hope you find inspiration for your beekeeping practice, your organizing practice and your relationship to the natural world.

Where I am Now: I am a beekeeper. Here are my practices, goals and purpose:

My journey with honey bees began in Boston in 2010, when I and several local beekeeping organizers started the Boston Area Beekeeping Association and the Boston Tour de Hives, a bicycle-powered apiary tour of the greater Boston area. I've now placed roots down into Western Massachusetts, a region that sits on the stolen land of Indigenous people from the Nipmuck, Pocumtuc and Wabanaki Confederacy. Here, I run a small bee business built upon the practices of reciprocity and modeled on the social norms of the bees themselves. I also work as a consultant with organizations seeking to change their culture.

I want to cultivate bees that can survive and adapt to the ever changing climate that we're experiencing in Western Massachusetts, South Florida and all over the world, and who can forage effectively during short nectar seasons. Parallel to that, it's really important to me to think about how people access beekeeping, how people participate in beekeeping, and who has access to exploring a relationship with honey bees. I write about that, as well as organize bee camps in Montague, Massachusetts. I run bee camps that are open to whomever would like to join, and another that is specifically designed for queer and trans folks who are interested in bees or just interested in exploring the relationship between humans and honey bees.

The parallel goals are to propagate healthy queens and then

to introduce bees to folks who are interested in building relationships with the natural world.

I run a small-scale operation with a maximum of a hundred hives a year. I collaborate with other beekeepers. I follow cycles of the moon in my breeding practices in order to use the rising energy that comes with the fullness of the moon to propagate hives. I utilize the contraction that comes with the new moon for starting new cycles in the hives. It doesn't always work, but we are trying. I respect my relationship with honey bees. It's not just keeping them for the sake of capital, but really figuring out how to work with them in a way that allows them to be healthy, successful, and reproductive. Simultaneously, I want to work with bees in a way that doesn't burn out my body and mind, and doesn't extract resources from the environment, but adds value to my community.

The journey to be a first-generation beekeeper/farmer for me means holding the duality of where I come from, and what I have access to now. I have built my business slowly — “slow bees.” I've used grants, shared resources and collaborative models to build what I have, and as I shift my work into more full-time beekeeping, I'm constantly examining and re-examining what I have and what I can leverage as I gain access to resources.

Beekeeping is the HARDEST thing I've ever done because it is complex and has an incredibly steep learning curve. Weather, pests, disease, and equipment failures are all realities of everyday experience, and balancing challenges with joy is a big part of the journey and the practice of stewarding bees.

I want a more accessible and diverse beekeeping industry that's inclusive of queerness, inclusive of blackness and brownness, and inclusive of the voices of Indigenous people. In addition, I want a beekeeping industry that works with the ecosystem and not in collaboration with the Industrial Agricultural Complex. The goal of building a practice of

inclusive intersection between the craft of beekeeping and the ecology of bees keeps me going.

Principles

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Personal Principles

I work, from these principles, to live a values-centered life.

I love myself.

I show this love by taking care of my body and my spirit. I show this love by practicing rituals of care. I show this love by putting my values into actions so I can live my intentions. I show this love by holding space for my most resilient self to thrive, and my most vulnerable self to be seen. I show this love by encouraging those around me to love themselves in these ways.

Guiding Principles

I am an anti-racist. I believe in co-liberation. I approach this work with rigor.

- I continue to educate myself about the ways the intersections of my identity both oppress and are oppressed.
- I practice awareness of how my oppressor identities impact those around me.
- I recognize I am implicitly racist, because of systemic racism and the myriad of privileges of whiteness.
- I use my white privilege as a leveraging point in white spaces AND in accomplice spaces.
- I seek to heal from my internalized white supremacy and racism.
- I seek to build friendships, communities, loves and intimacies that will hold me accountable to my values.
- I hold my white friends accountable by supporting them in unpacking their white privilege.
- I do not shirk from being told I cause harm but embrace where I can learn from my missteps and errors.
- I am compassionate with myself. I use this compassion to

move forward my healing.

- I pay reparations regularly to black, Indigenous, people of color (BIPOC) organizations, and advocate for other white folks to do the same via media platforms and interpersonal relationships.
 - I WANT to continue to explore how I can pay reparations based on how my business grows, and how I can support others in doing so collectively.

I value my own healing.

- I seek out healthy, consensual support for processing my trauma.
- I recognize my resilience.
- I name and honor my vulnerability.
- I let my feelings be hurt, and still hold myself accountable to my values/actions.
- I set and hold clear boundaries.

I value family, both chosen and blood family.

- I work to create time for my partner, my friends and my chosen family. I hold this time as sacred, and center it above capitalist pursuits.
- I work to heal the complex relationships with my blood family by building new relationships where old harmful patterns once lived, and by forgiving old harms.
- I practice forgiveness, compassion and expressing love/gratitude in my relationships.

I value equitable reciprocity in relationships.

- I work to practice equitable reciprocity in my relationships by both resource sharing and asking clearly for what I need.

- I respect people's boundaries.
- I clearly set and hold my own boundaries.
- I forgive myself and others.

I value living in shared spaces.

- I share space with my partner.
- I envision sharing both land and space with others in small dwellings.
- I share land stewardship with others.
- I share this land with QTBIPOC folks seeking retreat and time/space on land.

I am a lifelong learner, a curious teacher, a social and insect scientist.

- I live into these values of learning and “nerding” by seeking out new information on my passions regularly and sharing them with others in both my professional and personal realm.
- I practice beekeeping as a lifelong learning tool.
- I believe beekeeping is a tool for transformative justice if practiced with mindfulness and care.
 - I write about, teach and talk about these ideas with curious folks.

I value community building that is intersectional across race, class, ability and gender expression and centers queer experience.

- I live this value by building community (friendships, loves, intimacies) across these intersections of identity.
- I live into this value by centering queerness in my work and in my community, building efforts by being an out advocate for queer justice across race, class, ability and

gender expression.

- I call for queer community I am a part of to continue to work towards collective healing by practicing transformative justice.
- I offer my listening skills to conflicts that arise in the community.

I value both closeness/intimacy and autonomy, I respect others' divergent needs for both.

- I clearly state when I need “me” or “solo” or “recharge” time.

I value mobility and capacity to travel and reconnect to “home” bioregions.

- I create time for travel.
 - I do this by weaving work/learning/travel time together.
- I spend time in South Florida and the South, because of their importance to my place-based history and present.
- I imagine ways my communities can connect, collaborate and share resources, culture and values constructively.

I want to be a conduit for connectivity.

Gratitude and Acknowledgements

Thank you first to my love, Bi Kline.

Finding you halfway across the globe in rural South Korea was the best kind of synergistic magic. Thank you for witnessing me as I face myself over and over. Thank you for being my accomplice in smashing everything from bottles to binaries.

Thank you for the push to root into place and manifest words into actions. You are all the blessing a human could possibly ask for.

My ancestors — who while on this earth were complicated and complicit in many of the “isms” I fight against. But now, as ancestors hold me in their hearts and in my dreams to right the wrongs of generations of suffering. Who meet me in that room in my mind to talk me through some of the most complicated decisions in my life. Who are ever by my side whispering “this is it” in my ear when I can’t access the feelings in my own gut.

My femme body — you’re hard to live with but you NEVER give up. Thank you for your resilience and strength. Thanks for dancing along the edge with me, and for waiting for me to figure out what “care” means.

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To all the beekeepers who said yes to being interviewed for this book for sharing your own beekeeping journeys and visions for the future. A special thank you to Melanie Kirby who welcomed me into her heart and home with open arms. You

made this book feel possible by saying, “YES” and I’m so darn grateful.

To my bee bud and friend-tor — Sam Comfort for always welcoming me in the bee yard, and trusting me with your bees even when I’m doubting myself. You’re a really patient “teacher of anarchists” and I’ll forever be grateful for your friendship. May we always remember that bar rests are a construct, just like everything else.

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To Sue Hubell for writing the memoir that got me dreaming of bees on my first dark winter in the Northeast.

Thank you to everyone who is picking this up. Thank you for bringing your curiosity to this. When you start pursuing an idea you have no clue where it’s going to take you. Sometimes your end goal is only the beginning. Stay with the work, don’t let your own shine scare you. Rest when you need to but always keep going.

As one of my dearest collaborators always says, “Ever forward.”

How to Use This Book

This book is a collection of stories from the field and resources for new and intermediate beekeepers interwoven with my own experience as a beekeeper over the last decade.

As much as possible in this text, we aim to avoid unnecessary jargon or lingo. So, it doesn't require a master's degree to decipher. The goal is to make the beekeeping stories, tools and strategies accessible, and to share practices and examples of all the lessons we can learn from the hive. The intention is that the resources will be adapted or inspire you to co-create new resources.

How to use this book:

- Start wherever you want! This book doesn't require you to start at the top of the Table of Contents and linearly work your way through to the end
- Find [tools and resources](#) to start or continue on your beekeeping journey
- Learn about what small-scale beekeepers are doing in their communities
- [Read](#) and share stories of the growing landscape of beekeepers who are women, femmes and/or people of color (POC)
- Refer to it as a reference guide
- Discuss [lessons learned from the hive](#) (i.e. building consensus) in your community and how you can apply these lessons to build networks of collective care and shared power
- Or use these tools to adapt new tools with co-collaborators
- Imagine how you'd use the concepts in your life/lives
- Try a practice
- Set a goal

- Share your new ideas or practice with a friend
- And with a community member
- Use it as a strategizing tool with your team/community/friends/think tank/group
- Use it to research, honor and learn about other people's work (see "inspirations")

I want to travel and talk about this book and about organizing and intention setting tools I've adapted from the hive; share my bee zines; talk about queering bees; read a section from my *Radicalize the Hive* Manifesto or talk about beekeeping. I'd love to gather the stories of beekeepers, ecologists and queer land dwellers. If you can host me, let's chat. Email info@theykeepbees.com or info@angelaroell.com or find me on Instagram, @theykeepbees. Zzb zzb!

Introduction

Thanks for reading, if you've landed here, you may be wondering...

“What is this book?”

This book is a collection of stories from the field and resources for new and intermediate beekeepers interwoven with my own experience as a beekeeper over the last decade. For context, I think it's helpful to begin by introducing myself.

My name is Ang Roell, and I run They Keep Bees, a queen rearing, honey bee research and education project based in Great Falls, Massachusetts and Southern Florida.

Why am I uniquely qualified to put together “Radicalize the Hive”?

I have been beekeeping for a decade. It started as a hobby that helped me break up my time as a graduate student and urban farmer in Jamaica Plain, Massachusetts in 2010. After long days in the classrooms and garden, escaping into the hives was my greatest pleasure and deepest meditation. In 2015 I began to shift bees from a hobby to a “side-hustle.” When you take something that you do for fun and do it for business, it morphs. Your joy shifts, your perspective changes. Suddenly things you did for free because they were fun become things you do to grow your business and livelihood. It becomes less okay to do things for a discounted rate, a deal or [dreaded] “for promotion.” You have to renegotiate your boundaries, and hold firm to the new ones as they take root.

At the same time you GET to do what you love...and figuring

out how to move the pieces of that slowly over time so I get to do what I want to do with what I love in a way that aligns with my values has had immeasurable impact on my physical, psychological and spiritual health.

Through a slow “side hustle” process & LOTS of collaboration, I created a business built on relationships, values, chosen family and living an uncharted life my grandmother would be proud of.

From the work that overlays my decade in social justice and education to my decade of beekeeping in the urban and rural landscape in the sub-tropics and the northern tundra is born this little text, guidebook and gathering of stories.

I’m committed to a lot of things:

- My own growth and learning
- My life partnership & chosen family
- My friends & community
- My collaborator(s)
- Building resilient relationships in the [Anthropocene](#) across the eastern seaboard
- Anti-racism, anti-oppression and the restructuring of an abolitionist society

Many of the things I am committed to are in this manuscript, others are just touched upon and need deeper discovery to be made whole, fleshed out, developed into the robust stories they deserve to be. All in good time. This is only my first book after all.

What makes my beekeeping practice unique?

I don’t know if I can call what I do “natural beekeeping” or “treatment free beekeeping.” Wild honey bees are at their best without our intervention so the idea of natural practice is complicated at best. For a while I referred to myself as a “bee

witch”, but this too is complex. I can say I practice and plan my work according to the moon cycle, the hive’s natural systems of reproduction, expansion and contraction. I have been running bees for 10 years, and doing a mix of other land and food based work as well – including off-site food systems education at the Franklin County jail, courses in building equitable local food systems in local colleges, on-site bee camps, wholesale green growing for restaurants, honey production and qualitative analysis of food systems projects working toward a more equitable food system and life on land.

In 2018 I began the process of expanding my apiary business and made it the central practice in my work life. Straddling two parts of the farm/food system world as an educator/consultant and beekeeper was leaving me depleted and feeling as if my attention and capacity were fractured. In November, in a movement towards disruption, I hauled half of my hives to South Florida (SFL). I came of age there, and have a strong network and community in SFL, plus SFL is a melliferous forest, full of nectar sources 9 out of 12 months a year, creating an excellent location for expanding my relationship with everybody’s favorite charismatic microfauna – the honey bee. This trip to Florida has been an incredible journey that’s completely reshaped my work landscape.

Don’t ever let anyone tell you you can’t ignite a love affair with place by saying “yes.” Nine years ago, I ran screaming from this swamp as fast as my hexagon-shaped van would carry me (approximately 63 mph to be exact). Fast forward to 2019 and never have I fallen for an ecosystem harder. I am now cultivating a plan to run a Northeast (Massachusetts/Vermont) and Southeast (SFL) apiary that would straddle rural and urban beekeeping, host Queer and Trans bee camps/skill shares and build climate resilient connection between the Northeast and Southeast as I travel the East Coast in a big red van.

I’m building into this dream now and it looks like traveling back and forth between my apiaries in the North and South

for queen rearing. It looks like rebuilding connection in Florida, fostering connection with farmers, food systems folks, urban growers and pollinator activists. It looks like doing experimental mycelium trials in the Northeast with my collaborators at [Fungi Ally](#). It looks like crafting experiments with my steadfast friend and mentor Sam Comfort of [Anarchy Apiaries](#) to analyze and figure out how to build generative apiaries. It looks like staying up late most nights fretting about how bees are doing in either location, and relying on the kindness of my friends and family to get through. My whole heart is in this beekeeping journey, I've felt it for years, and now is the time to actualize that.

I want to be able to cultivate bees that can survive, are adaptable to the ever changing climate that we're experiencing here in Western Massachusetts, on the East Coast and all over the world. I want to support honey bees who can forage effectively during short nectar seasons, and put up an abundance of nectar and pollen so that they're able to really thrive throughout the year. Parallel to this effort, it's really important to me to think about how people access beekeeping, how people participate in beekeeping, and who has access to exploring a relationship with honey bees. To get here, I've spent the last two years writing my thoughts on paper, and evaluating an evolving "theory."

A theory? Yeah, for context, we'll need to step back to 2017. In the midst of a cataclysmic life upheaval, I decided to travel to New Haven, Vermont to study with [Kirk Webster](#), a well respected beekeeper in the Northeast with an intentional practice that centers a balanced and intentional life. Right before my trip, I was writing feverishly. In my passion, I casually mentioned to a sweet-heart that I was going to write a book about bees, and tackle this issue of beekeeping and access. At the time, it was nothing more than a collection of ideas, sketches and record keeping systems from my own practice and rituals in beekeeping and queen rearing. I had the

ambitious drive to write something big, but honestly, at that moment I was romancing someone magic and I breathlessly spoke the idea into existence in that way you do when you're spinning a tale. The tale quickly evolved into a vision. The importance of the human and honey bee relationship and its entangled and complex story kept emerging as a symbol in my life. Why can't I write a book that touches on this apicultural practice turned "industry" by aspiring capitalists hellbent on "manifest destiny" in this so-called United States?

My heart and mind are sick from listening to the "pollinator protection" and "save the bees" rhetoric of the post Colony Collapse Disorder and Varroa Destructor beekeeping world. It struck me as a white-washed version of a complex and deeply exclusionary industry struggling to survive under the pressure of chemical pesticides, lost habitat and debilitating disease. It others our non-human allies rather than reflecting on how we can return to a sense of symbiosis with pollinators and the planet at large.

In this process, I realized it is important to craft a book that tells the stories of how we got here, what momentum we need to move in a different direction and how we can begin to disentangle, de-industrialize and radicalize the honey bee hive.

I have spent much of my time in the industry on the fringe, observing the social structure of the honey bee industry while I learned about cooperative social structures from the honey bee. I knew I wasn't the only one thinking this way and feeling the building momentum for change. Once I began reaching out, I quickly realized beekeepers are already out here doing the work, reconnecting to the wildness of the honey bee, disconnecting from the industrialized agricultural movement. Urban and rural beekeepers are doing the work of redefining the human/honey bee relationship, and scientists like [Tom Seeley](#) are examining the lessons we can learn from the wild bee and honey bee's adaptations to change.

It's time for us to examine how the wild bees' purpose and

our own can move towards a re-alignment. Beneath ideas of “industriousness” and “productivity” imposed by colonizers, wild honey bees are translators of sweetness and light. They are facilitators of pollination – nature’s fluffers humming between stamens and pistils, full up with pleasure and drunk on sunshine.

To move back into a more symbiotic relationship with the honey bee, we have to examine how entangled this sweet bee is with the historical relationship between colonization and industrial agriculture. We have to acknowledge that relationship. We also have to look closer at this system of cooperation we exalt for all of her wisdom. All natural systems have their flaws, and to understand the honey bee as a wild creature, we have to honor and learn from both their beauty and their flaws. I will dig deeper into this work in the [Manifesto](#) section of *Radicalize the Hive*.

Simultaneously, I think it is important to build communities of practice around beekeeping that align with this honoring of the human and honey bee connection.

To this end, I recently launched the inaugural “Queer and Trans Bee Camp Planning Team”, teaming up with our friends at [Out in the Open Vermont](#) for a pilot program. Our goal is to offer another bee day in 2020, and the first overnight QT Bee Camp in Summer 2021 so we can talk about “queering bees.” If you’re interested, reach out about how to help. We need you!

You can stay in touch with me by e-mailing info@theykeepbees.com or info@angelaroell.com. My Instagram handle is [@theykeepbees](#) and the farm website is www.theykeepbees.com.

Part 1: A Radicalize the Hive Manifesto

For an abbreviated, animated version of this Manifesto, watch my TedX talk “What bees can teach us about social change” below.



A YouTube element has been excluded from this version of the text. You can view it online here:

[http://openbooks.library.umass.edu/
radicalizethehive/?p=5](http://openbooks.library.umass.edu/radicalizethehive/?p=5)

The Manifesto section of *Radicalize the Hive* provides the reader with context about my perspective on beekeeping in the 21st Century. It examines where we are and how we got here by taking a look at the historical significance of honey

bees in North America. This section is based on my own experience as a radical and queer beekeeper over the last decade.

Beneath ideas of “industriousness” and “productivity,” honey bees are translators of sweetness and light. They are facilitators of pollination – nature’s fluffers humming between stamens and pistols, full up with pleasure and drunk on sunshine.

Right now the honey bee/human relationship is transactional. We want to “save the bees.” If we want a reciprocal relationship with these creatures, we have to ask what we LEARN from the bees to begin to shape change so we can be more responsive to each other and our ecological allies.

To move back into a more symbiotic relationship with the honey bee, we have to examine how entangled this sweet bee is with the historical relationship between colonization and industrial agriculture. We have to acknowledge that relationship. We also have to look closer at the honey bees’ system of cooperation and ask what we can learn from honey bees as a “social super-organism.”

We can take lessons from inside the hive to begin the process of building new resilient worlds together, worlds that honor natural rhythms and lessons.

In this section I examine lessons from the hive:

- The root cause of the plight of the honey bee
- How honey bees effectively collaborate
- What humans can learn from honey bees to be more effective collaborators:
 - a. Review lessons that can help us shape change in OUR own exploitative industrial culture so we can be more responsive to each other and our ecological allies
 - i. Setting terms, sharing power, building collective understanding, working towards

building consensus while being compassionate
and forgiving ourselves

ii. Sharing purpose, AND sharing joy

- How we can apply this in our work to build networks of collective care and shared power. To me true collaboration is sharing power with each other rather than holding and manipulating power over one another, or over another species. This is how I have shaped my own iterative practice and my work, and in this section I share that with you.

The Story of this Book

The story of this book started in the spring of 2017 when, in the midst of a major life upheaval, I fled to Vermont to deepen my beekeeping practice with [Kirk Webster](#). Inspired by my time at Kirk's, I told a friend, "I'm going to write a zine about bees." At the time, this "zine" was nothing more than a discombobulated collection of sketches and tools of the craft that I had gleaned from mentors and modified through my own experience.

After I spoke the words, I started thinking of the pollinator protection movements and where we are. I wondered who has the microphone in this movement? Who needs it? Who has access to bees and who doesn't? I reflected on the story of how we got here and what momentum we need to move in a new direction.

The story of this book also started over a decade ago, when an uproar arose from within the national and international pollinator community about massive bee die-off. Pollinator die-off is a complex ecological issue that involves more than honey bees, and in fact, impacts native pollinators, butterflies and bats. But the 2.66 million honey bee colonies in the United States became the central actor in our collective conscious.

Within the honey bee colonies, the issue was distilled down to “Colony Collapse Disorder,” a “root cause” and no clear solution.

Over time, we’ve discovered the problem is complex — due to loss of a diverse habitat, the over-use of toxic pesticides, aggressive viruses and rapidly changing climate, honey bees as a species, are in danger.

This is a problem for honey bees, but also for humans because bees are a keystone species. Which means, we rely on them for our survival. Every 1 in 4 bites of food we take is thanks to honey bees. Imagine if bees ceased to exist. How would we pollinate foods like apples, avocados and almonds?

The parasites, viruses and pesticides that are impacting our honey bees, and our ecosystem are complex, and the challenges are constantly mounting as climate changes. Amidst these mounting challenges, a movement to “Save the Bees” has risen up in the collective conscious to help the important and charismatic microfauna — the honey bee. This rally call has built a movement of people engaged with the honey bee. Our relationship with this creature dates back over 8,000 years. Honey bees appear in ritual across the world from the Himalayas to Eastern Europe.¹

Humans and honey bees are deeply intertwined, and because they are deeply entwined, we need to examine the use of the word “save.” According to the Merriam-Webster dictionary, the word “save” means to rescue or deliver from danger or harm and to preserve or guard from injury, destruction or loss.

What are we saving bees from? Our desire to save any single creature limits our vision and makes it hard for us to see the connections and relationships between ourselves and the creature we’re trying to “save.” The use of the word “save” puts us in a position of “savior.” **Assuming the role of “savior”**

1. See research by Eva Crane on the world history of beekeeping

removes our actions and behaviors from the equation, giving us plausible deniability for why honey bees need saving in the first place. Authentic learning relationships can't take place when we are trying to "save" those we seek to learn from. By claiming to be the hero, we are "othering" and creating a divide. **Failing to honor the relationship between ourselves and the honey bee limits us to inadequate solutions to a larger systemic problem of environmental destruction and systemic oppression for capital gain.** It defeats our capacity to see the whole story and respond in a way that speaks to our full humanity as living beings on this planet.

Our current economic model is based on endless growth, consumption and permanent race for profit. This economic system threatens the ecological balance of our planet and has multiplied inequities. As humans participating in this system, we stand on the precipice of ecological crisis. The idea that we will be the "saviors" is a grand self-delusion. A movement built on "saviorism" and the individualizing of a problem to one sub-group or species is one ignorant to the need for systemic change. If we can not imagine systemic change, we can not begin to abolish the systems that have perpetuated the oppression of people, land, water and animals since the United States became a country.

As Wendell Berry wrote in [*In Distrust of Movements*](#):

"I must declare my dissatisfaction of movements to promote soil conservation or clean air or wilderness preservation or sustainable agriculture or community health or the welfare of children...I am dissatisfied with such efforts because they are too

specialized, they are not comprehensive enough, they are not radical enough, they virtually predict their own failure by implying that we can remedy or control effects while leaving causes in their place. Ultimately, I think, they are insincere, they propose that the trouble is caused by other people, they would like to change policy but not behavior...To make ourselves into a practical wholeness with the land under our feet is maybe not altogether possible—how would we know?—but, as a goal, it at least carries beyond hubris, beyond the groundless assumption that we can sub-divide our present great failure into a thousand separate problems that can be fixed by a thousand task forces of academic and bureaucratic specialists. That program has been given more than a fair chance to prove itself, and we ought to know by now that it won't work.”

Over the last 10 years, I've worked and learned through honey bees. I've come face to face with an ecological collapse brought on by the abuse and misuse of our planet fueled by an ever-expansive model of capitalism. The only way capitalism can be profitable is through a process of “[primitive accumulation](#)” — where things like slavery and colonialism are utilized to extract free labor and resources from people and planet. It's not some innate quality of humans that has destroyed the planet, it's a product of how the system of capitalism operates. If we aim to live in cooperative symbiosis with the planet, then we need to name the systems that cause planetary destruction. Labeling them helps us separate humans from the behemoth systems. Labeling helps us make room for humans generating potential solutions to the climate crisis that aren't about exploiting

nature but are about entering into a much more balanced relationship to the web of life. **Honey bees are not the ones out of balance with the ecosystem, humans are.**

The Earth and her fauna and flora have much to teach us. We need to remember that we are a part of a place, a history and a solar system of planets much bigger than ourselves. When I listen to the bees, I hear the stories of an organism ready to teach us lessons about successful cooperation AND the dangers of industrialized expansion.

In the year 2020, it is difficult to deny that each of us exists within the framework of systemic oppression that actively impacts our lives, our work and how we move through the world. With practice, we can actively examine how oppressive patterns show up in our minds and in our daily lives. It's inside of us, and if we're not actively doing the work to root it out and build awareness of it and deconstruct it through healing and equity building, we are not doing the work of radicalizing or abolishing the systems of oppression.

But we can! We can shape change if we remember [Audre Lorde's](#) well-known declaration that **“the master’s tools will never dismantle the master’s house.”**

Two of the primary tools of human complacency in the face of climate disaster are despair and shame. Despair and shame are not effective tools for learning. They are tools of oppressive forces, like patriarchy, white supremacy, colonization and settler culture. Despair and shame incapacitate our search for collective, systemic solutions — the only solutions that will truly work. By participating in shame and fear we are adhering to a dysfunctional culture instead of shaping our own. We need to practice building a new culture, while leaving room for our roles to be fluid. We need this practice so people can breathe enough to fight with passion and not from a disempowered space. So energetically we can ebb and flow like the hive, contract and expand and SWARM when the time is right.

I'm proposing in this moment we have an opportunity to

plant our courage and our hope in the deep soil we're standing in. We need to use our courage to address our collective needs by turning to our natural and elemental allies and ask:

"What can we learn?"

"What can we BE together? What can we DO together?"

So, what if instead of looking to modernity for solutions, we turn our attention towards the indigenous, ancestral and ecological ways of being in relationship with our surroundings? I think we stand to unlearn unsustainable patterns of expansion inherent in capitalism.

The honey bee and human relationship is old. There is evidence that humankind was gathering honey in the late Paleolithic times, ten to fifteen thousand years ago. An 8,000-year-old rock painting discovered at Arana Cave near Valencia, Spain, depicts a person climbing a ladder to gather honey from a hive on a cliff face. This picture was made when humans were still in the hunting and gathering as their primary source of sustenance, before they had begun to farm or domesticate animals.

Radicalize the Hive is the idea that we can start to work in reflective practice in ourselves, our communities and our organizations. We can use this charismatic microfauna as an example of the cooperative energy and momentum it takes to engage in change making work OR shift systems.

I'm going to say things that are critical of the beekeeping industry and draw attention to how many of us serve within and rely on that system for capital, resources and equipment. We're going to look at the challenges and the reality that we're all playing into the challenges and how we begin the work of radicalizing using the hive as a model.

While Colony Collapse Disorder was being labeled the culprit of a widespread honey bee collapse, I was in Dedham, Massachusetts in an itchy white suit with my French beekeeping mentor Jean-Claude holding a dolly with one hand and staring at an old whiskey barrel brimming full of bees.

According to Jean-Claude, our instructions were to “remove it.” Jean Claude and I sealed up the entrance of the “whiskey hive”, packed the whiskey barrel into the back of my small pick-up strapped down with several carefully placed ratchets and dropped it off at the apiary at dusk. The next morning, again packed tightly into a bee suit, gloves and pull-up galoshes, I helped Jean-Claude carefully cut and band the hexagon shaped layers of brood and honeycomb and rubber band them into the wooden frames of a new bee hive.

Tens of thousands of honey bees hummed around us peacefully as we worked to rehome this wild hive. The scent of nectar was thick in the air. This was a moment of connection to land, air, water, plants and mycelium — all of these systems honey bees bind together. I was struck by how much honey bees have to teach us. Jean-Claude was studying wild hives and asking, “*What are the bees doing to adapt?*” and trying to mimic bee behaviors in his hive management strategies. From the very beginning of my beekeeping career, I was taught to look to honey bees for the answers.

HONEY. OUR HIVE IS BUILT AND RULED BY WOMEN.
HONEY. WE WERE ONCE WILD. LOOK AT THE FLOWERS.
WE RAISED THEM INTO ARTICHOKE, PEPPER, SQUASH,
AND APPLE FOR YOU. HONEY. YOU FOUND OUR HIVE
AND RENAMED IT COLONY—OR A FACTORY OF YELLOW
BLACK & BROWN HONEY. WE ARE THE SILENT WORKERS
WHO BRING HOME YOUR DINNER. WHETHER OR NOT
OUR HONEY COMES HOME. HOME WAS THE WILDFLOWER
YOU PULLED OUT TO PLANT YOUR WHITE MONOCULTURE.
HONEY. WE POLLINATE THIRTY ACRES OF WHITE
APPLE TREES TO BRING HOME ONE POUND OF HONEY,
TO BRING HOME ONE POUND OF BODIES. THE POISON
IN THE POLLEN IS POISON IN OUR COLONY IS POISON IN
YOUR CHILDREN. HONEY. TELL ME: WAS YOUR BREAK
FAST SWEET? HONEY. WHEN THIS COLONY COLLAPSES
INTO A FOUL OF YELLOW BLACK & BROWN HONEY.
THE WOMEN ARE ALWAYS THE FIRST
TO GO. I CLOSE MY WINGS AND HIT
THE GROUND. I OPEN MY WINGS
& MY COLONY DROPS DEAD.
I CLOSE MY WINGS & EVERY
FLOWER AT MY FUNERAL
BEGINS TO GRIEVE—
WHO WILL RAISE
THE FLOWERS
WHEN WE'RE
GONE? HONEY.
YOU SEE OUR
QUEEN? SHE
IS NEXT. HONEY.
EVERY DROP
OF MY YELLOW
BLACK & BROWN
IS FALLING INTO
A FIELD OF WHITE.



HONEY,
I'M HOME.

Figure 1.1 Honeybees

Industrialization of the Honey Bee

Before we discuss strategies for dismantling systems or become lost in the “magic of bees”, let’s look at the industrialization of the honey bee on the North American continent.

In the current agricultural system, with their pollination power, honey bees are responsible for pollinating 1 in 4 bites of our food in North America. Honey bees and the practice of keeping them or “beekeeping” is rooted deeply in the US agricultural system. And the United States (US) Agricultural system is rooted in racism, a social construct designed to exploit labor of black and African heritage people through slavery. Slavery launched modern capitalism and turned the US into one of the wealthiest countries in the world.

Honey bees aren’t endemic or indigenous to the North American continent. They were introduced to the US colonies in 1622 on board a ship that landed in Richmond, Virginia. Honey bees were and continue to be used to support agricultural expansion in North America.

According to CW Weber’s book, *Sam or the History of Mystery*², Indigenous peoples on Turtle Island quickly realized the advent of the honey bee was an indicator of coming colonizers. In 1820, the first honey bees made their appearance on the Braxos and Colorado rivers in Texas. Five years later, the Austin settlement began to rise on the banks of these two rivers, and Indigenous tribes were displaced from their land. White settlers stole indigenous land and displaced the Indigenous tribes in and around Austin, rendering them exiles on their native soil.

Throughout the growth and expansion of the so-called United States, honey bees were used to support

monocropping agricultural models, and rapidly became a key player in the industrialization of agriculture.

Today honey bees are employed in migratory beekeeping practices, moved across the US via 18-wheeler (semi-trailer truck). Migratory beekeeping is an industry that begins with almond pollination in Southern California. Each year 1.7 million hive boxes full of bees are transported to California from all over the US via tractor trailer truck and set down in the 1.3 million acres of almonds.

This accounts for close to 85 percent of all the honey bee hives in the United States. California's almond bloom is the largest pollination gig anywhere in the world. Those truckloads of bees don't stay put in California's Central Valley all year though. The almond bloom typically lasts just a few weeks in February. These bees and their keepers engage in an endless summer of chasing nectar producing plants. They crisscross the nation 10 months a year, working tirelessly to pollinate everything from oranges to blueberries. This industrial model of agriculture uses 388 million pounds of Glyphosate annually, a pesticide (and key ingredient in RoundUp) so toxic it is banned in the European Union, China and Brazil.

[This work](#), as you can imagine, is taxing for both honey bees and beekeepers, because, just like capitalism, it relies on consistent expansion to be successful, leaving no room for contraction, rest or recovery.

Approximately a decade ago, we began to see the impact of this agricultural system on our pollinators. Honey bee hives began "failing" or dying out completely by the thousands. And so, like canaries in the coal mine, honey bees are giving us a warning about the impact of these expansive systems on our environment.

Today we know the biggest parasite honey bees face is the Varroa destructor mite. In 2018, [Sam Ramsey of the University of Maryland](#) discovered that varroa mites feed on the lymphatic system of the honey bee — resulting in a weakened immune

system and the rapid spread of viruses and diseases within the hive. We now know that these viral loads are combined with a loss of pollen and nectar based forage. Loss of forage is due to climate change. Systemic use of pesticides and herbicides used to maintain our food system poses a major threat to the immune system of the honey bee, making honey bees more susceptible to bacterial and viral infections manifesting in the hive.

Last year, according to a national survey by the [Bee Informed Partnership](#), 40 percent of managed hives in the United States were lost to viruses and Varroa mites. This is an alarming rate of loss. These losses were experienced throughout the season. What does that mean? It means hives were lost not only during the long cold winter months, but also during the active honey bee keeping season across the continental United States.

From this industrialized model of beekeeping we can see that mimicking systems of expansion and exploitation is not a generative way to build new worlds. So where do we find hope and change amidst this catastrophic environmental crisis?

Honey bees have taught me that hope and change can begin very small.



Figure 1.2 A queen bee

This is a queen bee (see image above). A queen bee is no bigger than the thumbnail on my right hand, but she can lay over 2,000 eggs a day. Each and every one of those eggs is a hope of a future generation, laid with the hope that flowers will bloom, and nectar will flow and each bee will have enough food to grow into an adult honey bee.

For more on this, see video link below.



A YouTube element has been excluded from this version of the text. You can view it online here:

<http://openbooks.library.umass.edu/radicalizethehive/?p=5>

Strategies

Activist and facilitator [adrienne maree brown](#) says “Small is all.” Leopold Kohr coined the term “Small is beautiful.” And when it comes to honey bees I have to agree.

Small-scale beekeepers are already working with the honey bees’ natural systems of adaptation to find ways to support bees and radicalize the beekeeping industry. It takes incredible commitment and careful work to build change at this small scale, especially when you’re facing down behemoths like “industrial agriculture.” **But beekeepers are hoping to build**

a new culture of beekeeping by working with the adaptive capacity of honey bees that they observe in the wild.



Figure 1.3 Melanie Kirby

“You have to act as if it were possible to radically transform the world. And you have to do it all the time.”
– Angela Davis

Beekeepers like [Melanie Kirby](#) of Zia Queen Bees of New Mexico are raising adaptive bees that can deal with disease and rapidly changing climate. Melanie refers to her work as “seed saving, with bees.” These “seed queens” are adapted to the bioregion where they were raised, making them more resilient than bees imported from outside the region.



Figure 1.4 Kirk Webster

[Kirk Webster](#), a beekeeper in the hills of Vermont raises “survivor stock” honey bees using no chemicals or treatments in his hives. Kirk’s bees can survive long harsh winters while successfully resisting diseases.

As a small-scale beekeeper myself, I’m looking into ways to build resilient community while fostering a connection between humans and honey bees. Last fall, my friends and I hosted the first Queer and Trans (QT) bee field day at my [farm in Western Massachusetts](#). Together, we gathered 18 new, or aspiring queer and trans beekeepers to foster an affirming space to share skills and resources. We gathered to build a deeper relationship with honey bees and practice interdependence with one another.



Figure 1.5 Inflatable skep beehive model created by artist & beekeeper Maria Molteni

At the inaugural bee day we opened up bee hives, and learned about what happens inside. On plant walks we learned about plants bees pollinate in the ecosystem. Facilitators told stories of how both humans AND honey bees can use each plant. We used hand crafted guidebooks to identify plants, made by our rad planning team of QT organizers from across a wide spectrum of identities, sharing a collective purpose. Through QT Bee Day events, we're making bees a gateway bug for shaping new relationships with the natural world by queering our understanding of bees. What does that mean? It means we're reclaiming a forgotten relationship with the natural world

that moves beyond binaries. We are shaping relationships with the natural world built on reciprocity.



Figure 1.6 Inflatable skep beehive model created by artist & beekeeper Maria Molteni

Small actions like these are building a culture of “small-scale” beekeeping. These practices collectively reframe the value of honey bees — rather than using bees as a tool for pollinating industrial agriculture, we’re using bees as a model for building community.

At my [farm](#), we are supporting aspiring beekeepers and [teaching skills](#) like swarm catching and how to raise queens. Through actions like these, small-scale beekeepers are building

new beekeeping communities that are collaborative, while supporting thriving hives.



Figure 1.7 Queer & Trans Bee Day organizers gather around inflatable skep beehive model created by artist & beekeeper Maria Molteni.

When my collaborators and I facilitate small groups of aspiring beekeepers, we reflect on our visible and invisible social identities including race, ethnicity, class, gender, sexuality and ability. We name where people hold power and privilege ***because you can't share power if you don't know you have it.*** Diverse perspectives and identities are important, but they can only become powerful when we make space for them to be heard, valued and integral to the collective. Because we're not bees, we have to make space for humanity which means making space for our differences AND our traumas. We have to make room for healing and repair. The decision-making we

engage in within our communities has to be accessible for those marginalized by our current system. It has to call in our survivors and create space for compassionate listening and the bravery to share diverse perspectives and experiences as a group.

When we build high trust groups like this, we can be very coherent and effective. Bees trust innately, it is part of their biology. But we have to build it, just like we build new neural pathways in our brain when we learn new habits. Then we can be agile and adaptive in a complex and rapidly changing environment, while sharing power.

Lessons from the Hive

You don't have to be a beekeeper to start sharing power. You can address big issues by starting with small actions to combat environmental injustice in the small groups you're a part of today. The lessons we can learn from the hive are lessons on iterative process. Iteration is the repetition of a process. In a healthy hive, we see some basic essential functions and lessons we can adapt to our own groups from each.

Essential Function:

In a balanced ecosystem, honey bees are facilitators of pollination — transforming sunlight into sweetness by transmuting nectar and pollen into resources for their young. They are facilitators of interspecies sex humming between stamens and pistils. When hives are gathering these important resources from nectar producing plants, they are full up with pleasure and drunk on sunshine. They are in a reciprocal relationship with the ecosystem in which they are pollinating. They draw resources from and contribute to the plants' capacity to thrive. Honey bees pollinate food they'll never eat, store nectar and pollen for young they'll never meet and swarm to locations they decide upon while suspended in midair.

LESSON:

Relationship with our surroundings can be joyful, purpose-filled and interdependent.

Internally, when we look into a hive, we see individuals working in roles, practiced with ritualistic precision by each bee, for the collective benefit of the hive's longevity. Every hive is made up of 30,000+ worker bees, one queen and several drone bees.

Essential Function:

Worker bees are the force of collaboration in a honey bee hive. They play a very important role in the hive. Workers begin as cleaner and nurse bees who prepare wax cells for their sisters' birth by cleaning, polishing and adding food to each cell. They care for the young bees of the hive. Young bees also spend time as builders. They engage in an act called festooning, in which they hang off of one another secreting wax from scales on their bellies and passing it arm to arm to mouth and chewing it into hexagons in which to store young, food and water. Foragers gather resources for the hive. They can travel 5-8 miles to collect pollen, nectar, propolis and water that will feed and hydrate the hive.

LESSON:

We can play many roles and move between them fluidly.

Essential Function:

Wax is the foundation of a healthy hive. It is the architecture upon which the entire hive is built, the central nervous system of the hive. Hexagons hold the most weight with the least amount of material.

LESSON:

Work together to build solid foundations on which to collaborate.

Essential Function:

Pollen and nectar are collected from flowers by forager bees. These resources are transmuted into food, called bee bread, for the current young, and stored as resources for the next generation in the form of honey.

LESSON:

Share in the abundance, store it for moments of contraction.

Essential Function:

Propolis is collected by forager bees as resins collected from evergreen trees. Propolis is mixed with enzymes in a honey bee gut — it seals the inside of the hive, making it a sterile space for the young, and seals the hive from moisture, cold and predatory insects.

LESSON:

Cultivate a space that is healthy for everyone to thrive.

One of the most crucial elements of a healthy hive is clear, consistent and collaborative communication.

Honey bees communicate through several methods:

- Pheromones – a form of scent-based communication through glands on the honey bees' head and butt
- Vibration
- Dance
- Consensus building

We can look to the hives to see a clear mechanism for communication and consensus building. Honey bees reproduce by swarming. During a swarm, honey bee communication is collaborative and embodied. Honey bees make cooperative decisions through listening and responsiveness.

The most profound example is a swarm of bees.

During a swarm, honey bees collectively embrace change.

Swarms happen in Spring — when the bees have collected an abundance of nectar and pollen and the hive is FULL of workers. The bees begin to outgrow their space and prepare to split 1 hive into 2.

The bees will begin to raise a new queen by feeding tiny larva a special diet of royal jelly and pollen. The queen, much like a butterfly, spins a small cocoon inside beeswax and begins to pupate — or grow into an adult. When the new queen emerges from her cocoon, half of the bees in a hive will leave the hive with the old queen. They leave behind a newly hatched queen, young bees and plenty of food.

During a swarm, the bees cluster around the queen and hang from a branch. The swarm of bees then begin their search for a new home.



A YouTube element has been excluded from this version of the text. You can view it online here:

<http://openbooks.library.umass.edu/radicalizethehive/?p=5>

This past summer while conducting field work with a collaborator, I was stopped dead in my tracks by a swarm in action. We watched as tens of thousands of bees flew out of a hive collectively and hovered in a cloud all around us. They quickly clustered on the limb of a nearby maple tree, and we watched as “scout bees” began to search out new places to call home. It’s a fascinating process. Scout bees begin seeking out a dry hollow space. Then, they return to their sisters and begin to dance out the details of these locations. One by one their sister bees travel to these proposed locations and check them out. When they each return, they vote on the best location by taking up the dance of the scout bee who chose the best spot. The decision about where to go is an important one. They have no resources with them except what they carry in their

stomachs, and they need to find a safe, dry place to build their new home. Communication about new sites is vital to finding the best location. The dancing deliberation continues until the bees reach consensus about the best place for their new home. Finally, they leave their outpost and head for their new home.

To entice our swarm, my friend and I bungee strapped an old hive box about 10 feet up in an old chestnut tree to see if they'd like it, and they did! The next day the honey bees had chosen this box to build their new home within and were already building a foundation of wax to rear their young upon.

If we look to the swarm, we can see a road map for collaboration through consensus building. In the process, every bee retains their autonomy in this consensus building. There is no charismatic leader. The queen is a passive onlooker in the worker bee's collective process. Consensus building amongst honey bees is an intricate democracy. The consensus is built by sharing power, information and trust.

According to honey bee researcher Tom Seeley, "[These bees achieve their collective wisdom by organizing themselves in such a way that even though each individual has limited information and knowledge, the group as a whole makes first-rate collective decision.](#)"

But we are not bees; we are not yet as agile as they are in a group. Plus some of us think we can't even dance! There is deep complexity to our humanity, and our shared vs. autonomous experiences. There needs to be room for our autonomy along with opportunities for collective process. So how do we build successful collaboration in our lives? Even if you have two left feet, you can begin the "dance" of learning how to collaborate.

Bees take time to build communication that is iterative, equitable, interdependent and accountable. They eliminate charismatic leaders and to mimic this concept we have to minimize hierarchy.

We have to practice consciously sharing power so we can

begin to have honest dialogue while holding ourselves accountable to our purpose. Just like our team of QT bee day organizers, we can begin to practice sharing trust. With practice, our human groups can become agile like honey bees. We can build intimacy in our collaboration that truly takes everyone into consideration and makes room for new ideas. Authentic human consensus building can help us recognize we're part of a larger whole.

We, as humans, with autonomy, can move from this model of "collectivism" and towards accountability. We can build intimacy in our collaboration that is accountable so that when we need to be accountable to each other we can be. When we need to address harm, we can, so we can discover if/how to move through it. That requires holding space for grief, trauma, apology and reparations. I think accountable communication in groups, organizations and communities happens when we start small and build clear mechanisms for communication and accountability. Then we can aim to be accessible and build trust across differences, but this can only happen with radical honesty and iterative practice in high trust groups.

A high trust group can be very coherent and effective after establishing agreement about state, direction and norms. If you want to be agile and adaptive in a complex and rapidly changing environment, you must move as much decision-making power as possible into a consensus model that is small enough to be governed by authentic dialogue.

In small groups we can assess and respond to the pressures outside our group effectively and quickly address dysfunction and respond accordingly. In small groups we can abort a project if conditions are unhealthy or not generative. We can know when to fold. We can know when to set and hold boundaries for the health of our community. In small groups we can build efficient systems, we can grow with each individual, clear about the roles they need to play for cooperative success. This creates space for us to focus on

thriving when conditions are optimal and sustaining them when under pressure.

Then decision making can become iterative. There is trust built when we aim for accountable and nonhierarchical systems, and this trust helps us build our capacity to be interdependent.

Honey bees teach us to:

1. Build solid but malleable foundations
2. Embrace Change
3. Make Equitable Decisions through Consensus

Bees are a whole world, and they open you up to these other worlds — blossoming trees, spiders, ants, predators, opossums and bears, and how all of these things interact with each other. If we look to the ecological world all around us, to our allies in the plant, animal and insect world, we can draw inspiration for how to shape change. We can build our muscles for understanding natural rhythms and lessons once again. We can take lessons from inside the hive to begin the process of building new resilient worlds together beyond the hive. We can build collective care through shared networks. Networks that build power with each other. *To me, this is true collaboration, power with each other rather than power over one another, or over another species.*

When you can see systemically, in patterns, in iterations, in fractals, you realize how flawed our social systems and structures are because they are both limited AND disconnected. The more you realize that, the easier it becomes to decouple from degenerative practice and align ourselves with ecologically responsive, adaptive and generative process.

When we need hope, we can look at the small-scale changes already underway. Small-scale beekeepers are already building collaborative relationship with honey bees, raising bees who are adaptive and resilient. Small is where we begin to build

trust with one another. We can take trust building and change making in steps, in movements, in seasons. We can practice together. We allow for mistakes and shift behavior, thought and action. We can dismantle, rebuild and rewire. We can create new pathways to change. And take back our humanity, our intimacy and our shared understanding.

For an example of how to implement collaborative practices into your work, visit [this resource](#).

For an instructional guide to using these principles in your community, visit this recorded webinar [here](#).

¹See research by Eva Crane on [the world history of beekeeping](#)

²"*Sam or the History of Mystery*"

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Part 2: Interviews From the Field

I'm a small-scale beekeeper. At my farm, we are supporting aspiring beekeepers and teaching skills like swarm catching and how to raise queens. Last fall, my friends and I hosted the first Queer and Trans bee field day. Together, we gathered 18 "newbees," or aspiring queer and trans beekeepers, to foster an affirming space to share skills and resources. We gathered to build a deeper relationship with honey bees and practice interdependence with one another.

When I need hope in my work, I often look to mentors and peers in the field of small-scale beekeeping. Small-scale beekeepers are shaping small-scale changes to the beekeeping industry.

They are already working in small ways to adapt, find ways to support bees and radicalize the beekeeping industry. It takes incredible commitment and careful work to build change at this small scale, especially when you're facing down behemoths like "industrial agriculture." But beekeepers are hoping to build a new culture of beekeeping by working with the adaptive capacity of honey bees that they observe in the wild. All of the stories shared here were selected based on community-centered and natural beekeeping models, with some overlap of the two.

Small-scale beekeepers, whether in their own practices or embedded in community practice, are modeling collaboration. They are building relationship with honey bees and raising bees who are adaptive and resilient. Small-scale beekeepers are also working on honey bee education and leveraging community collaboration to support pollinators in rural, urban and suburban landscapes. These radical ways of "being" are

important to uplift in an industry where the onus is focused on production and expansion rather than education and community building. The stories of these community-centered beekeepers are important to uplift, which is why I share them with you here.

Many of these stories come from places and faces underrepresented in the beekeeping community — the stories here center communities of people of the global majority, woman or femme led projects and Indigenous voice. *Why?* Because these are the faces shaping honey beekeeping in the 21st century and the voices shaping change in how we work with honey bees and the natural world.

All of these practices — whether small scale producers or community-centered beekeepers — are all happening at a small scale. *Why?* Because small is where we begin to build with one another. We can practice together, allow for mistakes and shift behavior. We can dismantle, rebuild and rewire. As we do this, we can create new pathways to change and take back our humanity, our intimacy and our shared understanding.

My experience at WSU

Washington State University (WSU) runs a well respected honey bee lab. It is set in Pullman, Washington a few hours outside of Spokane, Washington in the heart of wheat production country.

At WSU researchers Sue Cobey, Erin O'Rourke, Dr. Steve Sheppard and Dr. Brandon Hopkins lead a honey bee lab where they research and develop strategies in:

1. Cryogenic freezing and preservation of genetic material
2. Instrumental insemination of queen bees
3. Brood assays to determine hygienic behavior

WSU collaborates with commercial beekeepers providing pollination services across the United States. WSU researchers work to produce and evaluate genetically diverse Carniolan queens, which they refer to as "New World Carniolans." They also work with beekeepers across the world to collect and preserve genetic material from Europe, the Middle East and North Africa in an effort to increase the genetic diversity of queens in the United States. Due to a law established in the mid-1920s, beekeepers cannot bring new queens into the United States without authorization and clearance from the State Department.

WSU researchers collect drone semen and cryogenically preserve this genetic material to bring into the US. Here WSU artificially inseminates queens, creating "breeder queens" who are host to specific genetic traits brought in through the cryogenic preservation practice. Through this highly technical and scientific method, they are working to increase the genetic diversity and resilience of honey bees in North America.

In Summer 2019 I had the pleasure of attending their "Queen

Rearing Symposium” to learn about the lab, the researchers and their work in the field. Here I was able to interview [Melanie Kirby](#) as she worked on her own honey bee queen mating research for her master’s degree, and see her work in action through the wider lens of the lab and the landscape of Eastern Washington state.

Learn more about WSU in this short video below.



A YouTube element has been excluded from this version of the text. You can view it online here:

<http://openbooks.library.umass.edu/radicalizethehive/?p=257>

Melanie Kirby

This summer I had the privilege of traveling to Pullman, Washington to interview Melanie Kirby of Washington State University (WSU) and [Zia Queen Bees](#). Melanie is completing her Master of Science in WSU's Apiculture department while running her own queen breeding operation in Washington (WA) and New Mexico (NM). Melanie generously shared her beekeeping journey with me.



Figure 2.2.1 Melanie Kirby, Zia Queen Bees (left) and Angela Roell (right)

Melanie fell into beekeeping by happy accident while on assignment in Paraguay as a Peace Corps volunteer. During her time in Paraguay, Melanie facilitated women's groups, exploring tropical apiculture.

Melanie shares, "I was trying to help the women diversify their farming so that then they could have additional streams of income. We'd go out and catch these wild swarms from cocoa palms, and then transfer them into hives. There was a lot of citrus and sugarcane as well as different trees that were flowering so we'd get a good subtropical mix honey out of it there. It was really fascinating to see some of the women take to it."

After the Peace Corps, Melanie travelled to Hawaii to study queen breeding at Kona Queen on the Big Island of Hawaii. Kona Queen is the largest queen producing honey bee operation in the world, producing over 245,000 queens a year. At Kona Queen, Melanie got a lot of practice with grafting — [a method that mimics the bees natural system of swarming

to raise several queens at once in a synthesized environment]. It was here that Melanie realized, “Oh wow, this is a skill that’s needed and I can travel the world with it.”

Melanie continued her journey of working and learning in commercial beekeeping operations in both Hawaii and the continental United States before returning to her home state of NM to begin her own operation, “New Mexico is...a really unique state. It has everything from desert to tundra. It’s what we call a tri-cultural landscape. You have the Native Americans – the Pueblo Indians, the Apache, Picuris Indians as well as the Spanish and Europeans. Over time there has been a blending of these cultures who are also fighting to keep their distinct identities and learn how to coexist in a very diverse yet adverse landscape.”

Melanie shares with me that the Indigenous people of NM have always occupied their ancestral lands and they have developed Indigenous technology learned through trial and error on these lands.

“That is how these cultures have survived for thousands of years. Taos Pueblo is a community with these ancestral buildings which are over a thousand years old and somebody’s always lived in them. Always. Growing up where there’s these communities that have survived successfully for thousands and thousands of years, and the seeds that they saved for strains of chili, and the three sisters, corn, beans and squash – these crops that they were able to maintain and these seeds that they saved and then they’d pass them onto the next generation. It really made me recognize, ‘Well, that’s kind of similar to bees and these ecotypes.’”

There are 28 recognized subspecies of honey bees. They can all interbreed because they’re of the same species but the subspecies adapt to different bioregions and ecosystems based on environmental need.



Figure 2.2.2 Melanie Kirby, Zia Queen Bees

In NM Melanie made the connection between bees and seeds, “Oh, the bees are seeds too and their stories, their historical capacities that have allowed them to do what they’re doing now have been formed over millennia. The genetic story that every organism carries with them can be passed onto the next generation. It’s like living proof of the past but also it’s already the future within itself. Just ready to evolve or adapt.”

Melanie’s work and research now centers on honey bee breeding selection in the United States, where honey bees are not endemic. Melanie researches strains of honey bees who can deal with various environmental stressors while still surviving and thriving. She trials bees in different areas and propagates them to share with other beekeepers. She also seeks out beekeepers who are doing similar types of “honey bee seed saving” to swap queen bees – the genetic “seeds” of a honey bee hive. Though Melanie already found bees marvelous, magnificent creatures breeding and swapping queens has made her realize how special each hive and its genetic makeup can be.

“I’m so glad they found me...I think a lot of the gratitude I have towards them is that they have really opened my eyes to just how interconnected we all are with not only each other but with our food, with our food system, with our land, with our soil, with our weather. They are a part of basically everything in some way, shape, or form through relationship. I can’t ever stop

thinking about how interconnected they are and that is their allure.”

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Antonio Rafael: Beekeeping to Reconnect to the Land & Indigeneity



Figure 2.3.1 Antonio Rafael, SW Beetroit.

[Antonio Rafael](#) is an artist-farmer-beekeeper-educator-environmentalist who co-founded [SW Beetroit](#), a collaborative of beekeepers in the Detroit area whose mission is to improve the ecology of the neighborhood through green spaces and tree planting. One of three people running the show and one of two of Puerto Rican descent, Antonio graduated college in 2012 during a

period where 50% of Michigan's Black population was put into "emergency management" following the 2008 U.S. financial crisis.*

Antonio's critical consciousness, radicalization, and draw to beekeeping emerged as Detroit was going through this economic downturn. Along with a group of friends, Antonio started a Chicago Indigenous hip hop and art collective (Raiz Up) to organize civil disobedience to protest the emergency management. He says, at a time when 1 in 3 Detroiters were losing their homes, he "turned to agriculture, farming, beekeeping, as a way to heal myself."

The SW Beetroit collective is more than about selling honey. They aim to expose the community at large to beekeeping and reconnection to the land. Their programming has garnered interest from young people and Black and brown communities in particular.

In addition to the Black and Latinx communities served, “A lot of my Yemeni neighbors love it,” says Antonio. “They like to buy the honey. A lot of people don’t trust in store honey so they appreciate that aspect of it.”

SW Beetroit works with and mentors young people. Antonio says, “It’s fun to watch them develop as young people” in addition to seeing their knowledge grow about the bees. He sees them gain “a certain competency...and confidence...from working with something that a lot of people [are] scared of.”

In Detroit’s landscape where food insecurity and health issues disproportionately affect Black and brown communities, engaging in beekeeping has proven healing for Antonio and the community at large.

“There’s nothing like you getting your hands in that dark soil and just like cultivating life,” says Antonio. “I think bees and honey – it’s just something that’s so good and so healing for communities that are so marginalized and so underserved and so traumatized.” In producing their own honey, they bypass the larger capitalist systems at work and also provide an opportunity to connect with nature and the “rhythms of the seasons.”

Antonio does a lot of work with Native American communities related to environmental justice and sees a deep need for Black and Indigenous communities “to be establishing as much sovereignty as they possibly can,” particularly for those located in the city where there’s a tendency to be more disconnected from nature.

One advantage to beekeeping in an urban setting like Detroit is there are so many abandoned houses and properties, says Antonio. There’s a lot more foraging that happens because

people don't cut their lawns. "We aren't subjected to fungicides and pesticides like rural bees are." Of course, there are negatives too – with so many residents buying potted plants from places like Home Depot, the chance of engaging with neonicotinoids might be a little higher.

Another advantage to SW Beetroit's operation is that they favor natural methods of treating mites over pesticide use. Antonio uses King Stropharia white cap mushrooms to help break down woodchips to increase soil organic matter to make use of the clay that's on the land. He's noticed that the bees will flock to the mycelium (mushroom network) throughout the year. Research by Washington State University and Cornell University is ongoing about metarhizium fungi that helps to attack varroa mites, but rather than wait around to be "sold" finalized products, Antonio and crew rely on their own systems to deal with mites.



Figure 2.3.2 Antonio Rafael, SW Beetroit (far right, in red)

Antonio says, “We’re harvesting mushrooms with the intention to create extracts that we will be putting in our feed next year. And working with Native communities to do that as opposed to white, power institutions and businesses.” Yet another way SW Beetroit has found to remove themselves from the dominant structure and money systems with which Black and brown communities generally have less access to and a poorer quality relationship to. Antonio says, “Once we get it down [how to best use mycelium for treating mites], we wanna be spreading that knowledge.”

SW Beetroit is a smallish operation: 30 hives. But they are small and mighty. For Antonio, “It’s really about the culture. If the thousands of beekeepers or even just a couple hundreds of those folks were just treating their bees a little more holistically, it would be less of a threat to our bees, so we feel like it’s our duty to share some of the knowledge and share some of these interesting techniques we are trying to develop.”

**Emergency management is essentially a financial emergency that’s imposed by the governor that allows the governor to put in place bankruptcy lawyers that take the place of government).*

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Brian Peterson-Roest: Bringing Beekeeping into the Light



Figure 2.4.1 Brian Peterson-Roest, Bees in the D (second from left, first row)

Brian Peterson-Roest of [Bees in the D](#) came into beekeeping as a hobbyist. A fifth grade teacher at Musson Elementary School in Rochester Hills, Michigan, Brian's "call" to beekeeping literally came via a call. In 2008, he was asked as a public school teacher to participate in a free two-

week crash course in beekeeping (taught through Oakland University) on Beaver Island on Lake Michigan. An award-winning math and science teacher, it was this opportunity and experience to learn with other teachers that "started my love for beekeeping," he says.

Now Brian works at Bees in the D, a non-profit organization that works with Detroit and Southeast Michigan residents, schools and organizations on honey bee colony preservation and education.

Brian fell into beekeeping at a time of personal hardship in his life, and 10 years later, with the bee population being threatened by CCD, Brian feels it is his "obligation to now be a voice for them. And to help them in their hard time."

With Bees in the D and a regional beekeepers club, Brian provides workshops, courses, and networking with other beekeepers. He also works with a company called Hive Tracks,

which developed a software to compile data and reports for clients on the 160+ hives they've placed in 50 locations. The data is used to look at mite counts and the health of the beehives.

Through various modes of education, Brian enjoys working with urban youth and communities and helping dispel some stereotypes about bees in the process. He's seen youth go from a place of not wanting to go near bees at all to a "point that I eventually get them in the suits," says Brian. "I eventually get them near the hives and before you know it they are just thinking it's the coolest thing."

Brian has also found a need to educate building engineers and other adults in communities who often confuse nesting wasps with bees and assume an aggressive nature without distinguishing between the two.

With more knowledge and curiosity about bees spreading, beekeeping is "almost becoming trendy," says Brian, which he doesn't have a problem with as long as people do their homework. "I just don't want people to misunderstand that you can't just buy a hive, put bees in it and just expect it to just take care of itself. There is a lot that goes along with it."

Brian recommends people interested in getting into beekeeping do a year of research to start. During that year, join a bee club, be part of a bee community and maybe find a mentor if you can. A lot of learning goes into the process but even with that, his own personal style is “minimalist.”

“I’m not going to go in the hives more than I have to because I want the bees to be able to do what they do,” says Brian.

Brian likes the direction that bee education is leading in with more and more people realizing the importance of bees – not just honey bees but also our native pollinators as well.

When he first started out in the business, he saw many beekeepers beekeeping in secret. “The hives were out of sight, out of mind.” There were many misconceptions. But now he feels “like beekeepers are kind of coming out of the dark because now people are starting to realize how important it is.”



Figure 2.4.2 Brian Peterson-Roest, Bees in the D.

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Danielle Bender: Beekeeping, An Artistic, Accessible Approach

Danielle Bender of [Public Hives](#) got into beekeeping because she saw the potential of bees being a “catalyst to people getting more engaged with their communities.” Public Hives promotes community pollinators by placing beehives in neighborhoods and parks in Miami, Florida.



Figure 2.5.1 Danielle Bender, Public Hives.

A couple years ago in Miami, there was a big Zika virus scare. Danielle noticed that there was a lot of aerial spraying for Zika going on but residents – many of whom walked everywhere, were older, and didn’t have access to the Internet or TV – were not being informed. Danielle got curious about this, noting in her neighborhood where there once were a lot of bees, there were no longer. She also noticed that she didn’t see grasshoppers or any other bugs any more.

“Communication makes communities stronger,” thought Danielle, and through her observation that the bugs were disappearing, she asked, “How do we get community members to communicate with each other and share information?” And how could she help provide opportunities for wildlife and the environment to flourish in her community?

As a grant writer and arts administrator, Danielle proposed a

project for a public space challenge where folks could generate ideas to make the community a better place to live in. Her proposal was to do beekeeping in public spaces even though she wasn't a beekeeper at the time. She got her start in beekeeping after doing lots of research, attending beekeeper association meetings, and contacting different beekeepers in the area.

"Just the idea of being able to experience beekeeping and doing that in the middle of the city in an urban environment, meeting neighbors, that was the main motivation and it's worked out."

"People have been really enthusiastic about this [public space challenge] and they are really curious about bees. Super curious," says Danielle.

Public Hives commissions artists to paint the outside of hives and provide interesting workshops. They take a broader arts approach to spreading knowledge about bees that they feel reaches more folks in the community than a strictly science-based approach would. For example, they provided one group workshop where architects from the University of Miami's women in architecture program designed different bee hotels to support native pollinators and another where they brought in two musicians that do experimental noise music to set up an interactive experience where people could plug in headphones and listen to the noises coming out of the bees.

As people sign up for workshops on their website, Danielle and the folks at Public Hives ask them what kind of programming they'd want to see in the future.

Many of these workshops are pretty intimate with about 13 people per visit (although they are looking to make these a little smaller for the sake of the bees). Danielle has noticed that in such visits people who come are "usually all strangers." She says, "Being in a situation where you are in a vulnerable position, you're nervous, you've maybe never been around bees before, or you're excited because you've always wanted to be

around bees...That makes people want to talk to the people around them.”

The Miami community is curious. “They want to know where their food comes from, they want to know processes, they want to be involved, they want hands on, and allowing them to do that really makes them more enthusiastic about the process itself.”

This intentional community focus extends to the speakers and artists Public Hives chooses to give workshops and events. “We try to choose artists that either identify with the space, or live and work in the neighborhood,” says Danielle. For example, in the Little Haiti neighborhood, “We had an artist whose name is Serge Touissant. He does murals all over and we commissioned him to paint the hive,” says Danielle. “So when he painted the hives, they’re very recognizably his style of art, and my friend and her son (both Haitian) [recognized] Serge’s work.”

Employing local artists in beekeeping workshops helps connect the practice with the neighborhood “because an artist from that neighborhood painted it” (in the case of the hive painting projects). In general, this community approach helps in “demystifying bees to someone that may have had a bad perception about [bees].” Danielle loves that this project is “a full circle opportunity to...get people meeting, demystify bees, and give opportunities to artists and beekeepers that live in the area.”

Public Hives also keeps it “local” whenever they host a honey harvesting workshop. They make sure that the demonstrations are led by a local beekeeper. They also center women and people of color when considering beekeepers to lead sessions,



Figure 2.5.2 Danielle Bender, Public Hives.

mentees, and artists. “Each beekeeper that leads a session is also simultaneously mentoring someone that may want to become a beekeeper. So, I make sure that any of the positions of someone leading a session is either led by women or POC.”

Danielle’s mission is to make sure this project goes beyond her as an individual “because that’s how things become stale, and that’s how people get burnt out.” Hence the emphasis on engaging the community on what kind of programming they would like to see and the focus on mentoring up and coming beekeepers to share in this wealth of knowledge, at places that naturally intersect for them.

“It’s just making sure that there’s room for other people to get involved.”

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- Danielle Bender with youth group © Danielle Bender is licensed under a [All Rights Reserved](#) license

Julia Common: Apiculture to Community Culture

“The first time I put my hands in a hive I loved it,” says **Julia Common** of [Hives for Humanity](#). Julia started beekeeping as a hobby at age 21, traveling with this hobby to England and Scotland. In 2012, when her daughter asked her to bring



Figure 2.6.1 Julia Common (left), Sarah Common (right), Hives for Humanity

bees to the city of Vancouver, British Columbia, Canada, Julia became the Chief Beekeeper for Hives for Humanity, a 200 colony operation. Hives for Humanity is a non-profit organization providing mentorship-based programming for people to engage in therapeutic culture that surrounds the hive. In her daughter’s community in East Vancouver, there are houseless folks and people living with addictions. The organization’s core work is to use beekeeping as a therapeutic activity for these populations.

Julia started with two hives given to her by a researcher from Winnipeg, Manitoba, Canada and from there began her journey to learn beekeeping. By the time she started Hives for Humanity, she went from one hive to 75 to 150 to 250 to the current number of 200 full colonies and 75 nucs.

Her daughter Sarah who had been working with marginalized populations in the Downtown Eastside of Vancouver doing gardening work thought that beekeeping could provide places of respite for these populations. The

introduction of the bees was well received. This area is fraught with drug addiction, homelessness, and unemployment but the community is strong. Sarah engages the community in beekeeping, gardening, candle making, and honey extraction. “They do all sorts of jobs to support the bees,” says Julia.

Vancouver is progressive with bees; pollinating corridors and parks abound and neonicotinoids are banned for use on plants. Vancouver’s winter is much milder and their growing season is longer. “Urban beekeeping is sweet because the bees have plenty to eat all the time,” says Julia. But, “the biggest challenge is that you do not want people to interfere with the bees.” So far, they’ve been lucky with minimal instances of people disturbing the bees.



Figure 2.6.2 Julia Common (center), Hives for Humanity

“Working for Hives for Humanity has changed how I do everything,” says Julia. “Everything that is happening to people is happening to the bees” – lack of nutrition, nowhere to live, chaos. Since moving from beekeeping as a hobby to a community service, Julia has focused on the parallels

between human nature and bees, a connection she may not have made if she stayed in the country with her bees.

“Moving them around, making splits when they are not strong enough, over treating them, exposing them to monocultures where they get poor diet, and chemical exposure and miticides” – these are all problems she identifies in modern beekeeping but with the advantages of the climate in Vancouver mentioned above, Hives for Humanity is well poised to address them.

The community has enjoyed doing extraction and found satisfaction in tasting the honey from their bees and making

salves or rolling candles in the winter. “Whenever I am with people I want them to have positive experiences with bees,” says Julia.

Hives for Humanity’s work of gardening, beekeeping and fostering connection to land and community, takes place on the unceded lands of the Musqueam, Tsleil-Waututh and Squamish Nations of the Coast Salish peoples.

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Sarah Red-Laird: Beekeeping as Part of the Bigger Picture: Agriculture and Apiculture



Figure 2.71 Sarah Red-Laird, Bee Girl.

Sarah Red-Laird, founder and executive director of the [Bee Girl](#) organization, cannot think of a time that she wasn't really into bees, honey, and beekeeping, though the fascination most likely began around the age of three when she got her first bee sting. Sarah became a beekeeper as an undergraduate student at the University of Montana where she did her senior thesis on beekeeping and

Colony Collapse Disorder.

The Bee Girl organization's mission is to educate and inspire communities to conserve bees, their flowers, and our countryside. She envisions a future where kids frolic in pastures of flowers, buzzing with bees, alongside profitable family farmers and ranchers. The organization's programs

primarily focus on both bee habitat conservation and kid's education.

"There's a huge need for beekeepers to talk to groups of kids and get kids excited about bees," says Sarah. Every year Bee Girl teaches "Kids and Bees" workshops across the world, instructing and encouraging fellow beekeepers to bridge children's fear to fascination by inviting them to learn about bees from an expert. She also partners with the American Beekeeping Federation, the Eastern Apicultural Society, the Farmers Union, and other nonprofit collaborators in her home town of Ashland, Oregon, to reach a few hundred kids each year with the motto: Love Your Bees.

Sarah has quite a presence in her Oregon community, consistently making appearances at local farming, beekeeping, and environmental events. She's toured five countries, two Canadian provinces, and 20 states speaking on the topics of kids education and bee habitat conservation.

During the first few years of her organization's founding, she taught evening beekeeping classes and a season-long hands-on beekeeping course. Now, however, she has moved on from teaching beekeeping to turn as much time and attention as she can to her "Regenerative Bee Pasture" project. This multi-pronged collaborative project aims to ensure there is an abundance and high diversity of bee-friendly flowers on as much of our agricultural landscapes as possible.

Starting with soil health, native bees and honey bees, and beekeepers will be the end beneficiaries of this project. As Regenerative Bee Pasture in Oregon grows, so will rural bee health.

Bee Girl has also advocated for urban bees. Beekeeping in Oregon has been legalized in every municipality in the southern region of the state. Sarah and the board of directors worked hard to legalize beekeeping in Ashland city limits in 2012. Since then, this ordinance has been used as a model for other municipalities to relax restrictions on beekeeping.

Despite the hard work of Bee Girl and other bee advocate groups, beekeepers still don't have it easy. Looking back to her beekeeping educator days, Sarah says her beekeeping students didn't realize "how much work, how much learning, and how much commitment there actually is [to keeping bees]. There is little or no room for mistakes, which is surprising. It's a lot harder to keep bees than it is to have a cat or dog...or sometimes even a horse or chickens."

Her primary advice to new beekeepers is to be wary of how incredibly important Varroa (and other pest/disease) management is. Secondly, she advises, "if you are not living in an area that has hundreds of acres of flowers blooming year round, you need to consider supplementarily feeding your bees...if there is not food out there for them, you need to help them out."



Figure 2.7.2 Sarah Red-Laird, Bee Girl

Sarah takes a more holistic view of the larger picture of agriculture and soil management. She sees a need for a cultural shift in transitioning from an intensive, chemically dense system into a regenerative system. It's tricky but "we just need more and more success stories on the ground of people showing how it really is ecologically beneficial to farm regeneratively and sustainably." She continues, "It's so much more beneficial for pollinators, and our own health, to build soil with flowering plants instead of with nozzles."

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Kristy Lynn Allen: Carving a Different Path in Beekeeping

Kristy Lynn Allen, owner and founder of [The Beez Kneez](#) in Minneapolis, Minnesota first got introduced to beekeeping by way of her uncle, a commercial beekeeper. In an industry largely made up of white men, Kristy is carving her own path as a woman



Figure 2.8.1 Kristy Lynn Allen, The Beez Kneez

doing business in a way that feels right to her. “My partnerships are not based on geography but on relationships that are important to me,” she says. Regenerative in its own right, but not necessarily “the most efficient business model,” she says.

Kristy didn’t want to become a commercial beekeeper and so started her journey delivering honey on bicycles. Later down the line, Kristy joined up with an educator and together they started a Kickstarter to raise money for what is now the Beez Kneez LLC. Together they taught a beekeeping education program for awhile and then her partner moved on because she wanted to be a nonprofit while Kristy wanted to be a social enterprise to avoid having to continuously write grants. Kristy started a 14-week intensive beekeeping course called Camp Beez Kneez – which runs from April through October – under the guidance of another woman beekeeper for the first year of the program.

As folks participate in the camp throughout the year (and

see how beekeeping is a lot more challenging than they anticipated), about half realize that beekeeping is too much for them and the other half are really into it. “It’s cool to watch those beekeepers and that community building,” says Kristy. “They take ownership over that particular hive, without the bees dying at the end of the year, and they get to see realistically what can happen.”

Kristy is proud of the model of city beekeeping she’s engaged in throughout the year because her program “forces those places I partner with to be very cautious of what they’re doing on their landscapes...universities planted way more forage, cut back on their treatments of lawns, even though they still do it, because our culture has a really hard time letting go of this green lawn situation.” While this model has its advantages, it’s hard to gauge why bee declines happen on campus – whether it’s crazy snowstorms or landscapers still treating lawns chemically. She feels bad for the bees that don’t make it through the seasons.

The Beez Kneez has about 150 production hives but a very small amount in the metro area. Kristy keeps only 20 hives on her farm on the border of Wisconsin and Minnesota. In addition to providing education to the community about the importance of bees, Kristy is searching for different angles to approach the bee issue, which “like all environmental issues, highlights how toxic our planet is.”

“As an activist, I’ve been trying to figure out ways to engage not just the people we preach to, but how do we hook ‘em?” says Kristy. During the first year of her campaign “Healthy Bees Healthy Lives,” the Beez Kneez hosted a competition inviting women chefs to a “Dandelion Honey Pastry Chef Challenge.” The competition would draw celebrities – chefs and entertainment alike – as a way to “hook” the community into paying attention to the bee issue. While pastries provided a good hook, Kristy acknowledges that there’s still a class issue within beekeeping because hosting fancy events alone to raise

money doesn't necessarily reach the populations who are typically underrepresented in the industry.

It's not just the fancy events Kristy struggles with, it's the state meetings too and conducting business within a largely older white male crowd. Though she doesn't "fit in" with this crowd or even understand



Figure 2.8.2 Kristy Lynn Allen, The Beez Kneez

things like how a Trump voter can love bees, she sees an opportunity to make connections across divides but it's not an easy task. "The fact that we have the bees as a connection is huge [but] what do we do with all these angry white men? If we are really about building community, [how do we bridge that divide?]"

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The Bee Squad: Partnerships in Beekeeping

The [Bee Squad](#) in Minneapolis, Minnesota came about after a huge surge in backyard beekeeping in 2011/2012. At the time, there was no state apiary program and the Bee Squad was the only extension program. Dr. **Marla Spivak** at the University of Minnesota Bee Lab felt such a program was needed to help new beekeepers and educate them. The Bee Squad became part of the university lab.



Figure 2.9.1 Dr. Marla Spivak, Bee Squad

This partnership “allows us to really focus on the education part and really focus on helping beekeepers and non-beekeepers in ways that are really attuned to what’s going on with the research and what really makes sense,” says **Bridget Mendel Lee** who works with Marla at the Bee Squad and the Bee Lab. “We are working with methods that really work for this climate and this particular region and this urban area in particular. And that’s always evolving.”

A major challenge of urban beekeeping in Minneapolis is “the density of beekeepers is really high and [so is] transmission

of drift of mites, so we have to make sure the bees are well cared for,” says Marla.



Figure 2.9.2 Bridget Mendel-Lee, Bee Squad

The Bee Squad strongly advocates mite testing and so they sell mite kits (of powdered sugar, shaker, measuring scoop and instructions with pictures on how to use). “We really advocate for treatment according to where you are not just what we do in Minnesota,” says Bridget. “Because we are also talking to beekeepers who aren’t in

our region.” The Bee Squad partnered with the University of Maryland and Michigan State to create an online platform where people can input their testing data and see what’s happening in their region.

Key to the Bee Squad’s reach is the various ways in which they partner with the community and with funders. The Bee Lab at the university was funded by state bonds, gifts, and donations. These came from all kinds of people in all kinds of income brackets, all of which made the difference. The Bee Squad was funded by folks that are also Bee Squad customers. “Many of our customers participate because they want to support the lab; and many donate far beyond the cost of the program.

Educating all supporters and customers helps “reach a lot of people at once by talking to large companies, but information spreads through family networks and neighborhoods, too.” Talking to people who start out hating bees, says Bridget, has been really interesting.



Figure 2.9.3 Dr. Marla Spivak (orange shirt) leads queen course, Bee Squad.

Like Kristy Lynn Allen of the Beez Kneez, Marla and Bridget find that bees have a reach beyond political affiliation and income status. “This is about bees and about changing our landscape on whatever level you want to take that,” says Marla.

“Our customers make a difference with huge amounts of funding; others with planting gardens, talking to neighbors, doing citizen science, or organizing educational opportunities for their communities.”

Bridget and Marla have seen the landscape of Minnesota change a lot since they started this project – more pollinator-friendly yards in Minneapolis and more political advocacy through groups like Pollinate Minnesota. Much like Kristy, the Bee Squad is carving their own path of a majority female-run operation with about 15-20 people on staff, most employed part-time.

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Stacey Vazquez: Beekeeping as a Family (& Urban) Affair



Figure 2.10.1 Stacey Vazquez (left) and Carolina Zuniga-Aisa (right), Island Bee Project

Stacey Vazquez is one half of the dynamic duo that runs [Island Bee Project](#) on Governors Island in New York City. Along with Carolina Zuniga-Aisa, Stacey manages the 7 hives on the island, which is also home to the GrowNYC garden program and the Earth Matter farm. Stacey and Carolina met at a beekeeping class at the Brooklyn Grange and became fast friends and co-

bee nerds.

They started out working on Earth Matter's (a compost learning center) farm for about two years and on their third year, the Trust for Governors Island contacted them to offer a dedicated space for their beekeeping. In 2019, Island Bee Project partnered with the Honeybee Conservancy and Stacey and Carolina moved again into the space they currently occupy.

In addition to providing education on honey bees, part of this partnership includes encouraging people to learn a bit more about the native bees that exist in New York as well. They continue collaborating with folks at the Brooklyn Grange and are always meeting new beekeepers in New York City. "I'm

always super shocked at how small, yet huge that community is,” says Stacey.

And with the Honeybee Conservancy, the Island Bee Project works with some other beekeepers as well. “We’ve done some on-site fairs at community farms in the Bronx,” says Stacey, and in addition to all the education provided, they also support community through social media.

Like the other urban beekeepers interviewed, Stacey mentioned one of the challenges to beekeeping in the city is having enough forage for the bees. She recounted a story of one season where the bees went in search for something to eat that was not good for them – runoff from a nearby maraschino cherry factory. And they learned an important lesson that year to make sure the bees had sufficient food ever since.

Aside from that, there are many reasons why “New York City is an interesting place to keep bees,” says Stacey. People get creative with use of space. “We have friends that keep bees in cemeteries...on rooftops, backyards, and city parks. There’s room available but you really do have to seek it out.”

As self-proclaimed “lady beekeepers” with Latinx backgrounds, neither Stacey nor Carolina has had any big issues in the larger beekeeping community, but Stacey admits it is largely a “boys’ club” still. However, “there’s a big community of women and lady beekeepers in New York City [and that] community is building, but we were always really surprised when we went to conventions – it’s a pretty one kind of group deal.” While conventions have in the past consisted mostly of old white men, “they’re [often] farmers and it’s amazing talking to them,” says Stacey. “It’s always really cool hearing their stories and meet[ing] somebody who has like 40 years of beekeeping experience.”

At the first convention they went to in the Berkshires in western Massachusetts, “everybody from class [at the Brooklyn Grange] – city kids rented a car, we drove out there and when we got out in a big field...it was gorgeous...but when we walked

in, we were definitely the most varied group there. At first, I'm pretty sure they were like, whoa, what are these folks doing here? What are these city kids doing here?"

"We definitely stuck out like sore thumbs. But at the end of the day, it was a great experience because everyone has the same goals in common and once people see that you're really interested in this cause and helping bees and keeping them alive, people just kind of stop seeing what you are, they see who you are."

Stacey thinks the beekeeper landscape is changing because "times change" and "I like to think this generation is becoming a little more conscious of what's going on in their environment and things that need to change." Stacey sees that "young people of all ethnicities and walks of life are really involved."

And young people of all ages have taken interest in bees and beekeeping. "We love working with kids," says Stacey. "When we do work with the Honeybee Conservancy, we go to different neighborhoods and talk to a whole class of kids." One of the special things about this is when Stacey and Carolina talk to the kids about bees, they emphasize "how every job that they do is meant to help the hive as a whole. Everything is done for the greater good of the hive. It teaches children a less selfish view of how you should live your life even though you're not a bee." Kids learn that everybody has a job to do.

And beekeeping has become a family affair for one family that's contacted them. A friend of a friend wanted to start a rooftop garden in her building and wanted to involve her two children (ages five and seven at the time) in the whole process. Stacey and Carolina split one of their hives, drove it over to Park Slope, Brooklyn, and the rest is history.

"We raised a beekeeping family in Brooklyn," says Stacey. "They're all beekeepers, and we still kind of mentor them when stuff goes on, if they have questions, and the mom comes out when we need volunteers and the kids come too. That was a

really awesome thing [that] we taught a whole family how to keep bees.”

Stacey finds New York City a unique place to be a beekeeper. “It’s definitely a special community of people who want to cultivate a natural environment within the urban environment” and beekeeping is “not the first thing you think of somebody doing in the urban metropolis of the country.”



Figure 2.10.2 Stacey Vazquez, Island Bee Project

In terms of beekeeping philosophy, the Island Bee Project avoids chemical treatments, opting for natural intervention for

Varroa mites, and “we try to keep it as minimally invasive as possible.” Like [Alwyn](#) of Oxx Beekeeping, Stacey and Carolina also use essential oils to keep mite count down and they also use formic acid.

Stacey mentioned a beekeeper in New Jersey who is raising “behaviorially hygienic bees” and this is something she hopes becomes a more mainstream practice “for people to be raising these kind of bees because they’ll either attack the varroa mites and bite their legs off so that they can’t attach to the bees, or they groom each other and take them off.”

“We’re aligned with the natural beekeeping philosophy,” says Stacey. “Our goal is definitely to get to a point where we don’t have to [treat them at all] but for sustainability reasons [minimally invasive and non-chemical treatments – and feeding – are needed so as] not to have to replace everything all the time.”

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Timothy Jackson: Finding the Light, not Blight: Turning Vacant Lots into Bee Farms

Timothy Jackson and Nicole Lindsey started [Detroit Hives](#) because they wanted to “find ways to bring communities together.” It all started with an article on the copious amounts of vacant lots in Detroit and a bad cold and cough.

In December 2016, Timothy had a bad cough and cold, tried various home remedies and all kinds of medications, but suffered from that cough

for two months. A visit to a local convenience store and recommendation from someone working there led Timothy to discover the power of local, raw honey.

“For honey to do the trick, I thought what else could it do for me?” says Timothy. From the article on vacant lots to local, raw honey significantly helping end his longstanding cough, he and his girlfriend Nicole decided they wanted to get into their own honey production and use the plethora of vacant lots in the neighborhood to get it off the ground.

Detroit Hives now has 35 beehives in 9 locations in vacant lots and near community gardens. They’ve become bee



Figure 2.11.1 Nicole Lindsey (left) and Timothy Jackson (right)

ambassadors with the Honeybee Conservancy, based out of New York. They use their apiary to educate inner-city youth about bees and have mentored over 2,000 kids so far.

“We wanted to find ways to bring community together but also wanted to attract people to this neighborhood to see something special beyond the blight they usually see,” says Timothy. And since their story went viral, including a short documentary by Spruce Tone Films, Timothy and Nicole have inspired many other people of color to take on similar missions, not only locally but nationally and internationally (in Kenya and Ghana) as well.

“A lot of times people need to see something to know that it’s possible,” says Timothy. And, “we really are having fun.”

He and Nicole incorporate everything from their backgrounds into their beekeeping – advertising, photography, fraternity and sorority acknowledgment. “We embody everything we love and do in beekeeping,” says Timothy. And what they’re doing shows the community that science is involved, but so is art and creativity. They’re showing folks that this “doesn’t have to be done with a researcher with 300 years of experience.”

Education is a pivotal component of what Detroit Hives provides and they also work with local universities, including educational research with University of Detroit Mercy, and they’re working to help shape policy as well.



Figure 2.11.2 Timothy Jackson (center), Detroit Hives

“We don’t always have the opportunity to interact with nature in these urban environments,” says Timothy, but Detroit Hives is helping make that interaction more possible and more diverse in a state like Michigan which “is not the most diverse state for people of color in beekeeping.”

Timothy stressed the importance of supporting community gardens to help provide food security for the community.

Detroit has vacant lots in the thousands – blight and eyesores is what most people see, says Timothy, but turning these lots into bee farms is helping boost native bee populations and other pollinators. A boon to much of this unattended land is that it’s chemical pesticide-free and some areas abound with a “variety and diversity of native plants, including clover, dandelion, and chicory.”

These lots that many would pass by without a second glance – “the areas people are overlooking and looking down upon are our goldmine,” says Timothy. Honey bees are a conduit to speaking on larger issues, including “breaking race barriers,” he says. Honey bees are “the gateway drug to learning about other bugs, other people and gaining an appreciation for all living things.”

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Eliese Watson: Inclusivity and Room to Grow in Beekeeping



Figure 2.12.1 Eliese Watson, ABC Bees

Eliese Watson of [ABC Bees](#) in Alberta, Canada was 18 and working at a local gas station when a “tiny ancient old man came in” who turned out to be a beekeeper and offered her his bees. She turned him down at the time, but four years later, at a friend’s house, she met a rural beekeeper who had acquired the bees of this same old man after he died and this

time she couldn’t refuse.

“From the first day I was beekeeping in those hives, I was stung and I was stuck on bees. And I never looked back,” says Eliese. That was in 2008.

Eliese offers mentorship programs in beekeeping free of charge, the only model like that in her area. Participants apply and are required to come once every two weeks for six hours and work the yard with Eliese. In her program, they learn how to make splits, how to raise queens naturally through the Miller method and grafting, and run two queen colonies. Eliese also teaches intermediate and advanced beekeeping that applies to treatment-free management and how to identify certain traits that are adaptable to illness in an apiary.

ABC Bees runs programs through charities and nonprofits

and puts their hives in public places, including the largest urban farm in Canada called Grove Calgreen. ABC Bees has been on the farm since they opened in 2005. The farm runs a lot of kids camps and field days for the public so the community gets to engage with the bees there. ABC Bees also does a lot of outreach to children and people with disabilities and to people with intermediate and advanced skills in beekeeping looking to raise their own queens. The landscape of the beekeeping audience is also becoming more diverse than it once was, with a lot of refugees coming into Canada, especially from Syria. The climate in Northern Syria and Canada is similar and a lot of refugees are coming from an agrarian background. “You don’t have to speak English to understand how bees work,” says Eliese. “The bees there and the bees here are the same. You can beekeep anywhere, even with a language barrier.”

Alberta is the fifth largest honey producing region in the world, with an average yield per colony from 120-1260 pounds surplus. When Eliese first looked into beekeeping, there were less than 200 beekeepers in the whole province; the average beekeeper was over 50 and had over 16 years of experience, which meant there weren’t many resources or education around.

Starting from a grant, Eliese launched a project to bring in an educator to teach a beekeeping course for “true beginner beekeepers” in 2010 and the project was “explosive.” The workshop was so successful, that they continued to offer it and from there ABC Bees grew as the educational business it is today. ABC Bees’ focus on advocacy for legislation and municipal regulation of beekeeping came out of public demand.

Offering programming for beginners to the advanced, Eliese has focused on how to make sure the learning environment is as inclusive and exploratory as possible; a “space where everyone can feel comfortable and welcomed to say, ‘I don’t

know, let's find out.” Eliese has found that at the commercial level of beekeeping, there's a tension between each beekeeper thinking their way is the only right way and that any type of conversation is by default an argument. And on the research level, she's found a polarity between researchers and scientists and beekeepers who work with bees every day. It's a crazy world sometimes, “which is so funny”; a beekeeper could have a best friend who is also a beekeeper but “will manage things totally different,” says Eliese, “and they will openly argue and neither one of them will budge.”

The introduction of ABC Bees in Alberta “revolutionized beekeeping in this province,” says Eliese, “from being an elitist large-scale commercial operation where the only people who can keep bees are the people who come from a history or past who know the whole legacy of beekeeping, to now transitioning into hobby beekeepers or even people who are getting into beekeeping commercially, like myself.” Eliese has noticed a dramatic change in the industry with more beekeepers now than in 1986. There's also the reality that bees and equipment are not allowed for import into Canada and so over 90% of beekeepers in Alberta have under nine hives.

Eliese sees an interesting contrast between beekeeping in larger densely populated places versus rural places and sometimes an ideology resemblant of a “God complex” in many urban beekeeping situations. She warns against keeping the dialogue to only focus on bees as a political statement and not include a balanced conversation about the actual health of the bees. For example, if you're keeping bees and living in an environment where the natural landscape provides scarce food for bees, how are you keeping them healthy? How are you ensuring that just because you want to raise bees, you are also being responsible for taking care of them?

As a treatment-free beekeeper, it can be a challenge on either side of the coin, urban vs. rural, because in many rural settings where people come from a strong agrarian

background, they may have a stronger affinity to agro chemical applications, says Eliese. “I breed treatment free stock” and because so many are used to chemical management, “I am a heretic in my own backyard.”

While Eliese has not used chemical treatment in her bee management, she is not dogmatic in telling everyone to go treatment-free because “if a person is going to treat, I want to make sure they have as many resources as



Figure 2.12.2 ABC Bees

possible to do it as safely for themselves and the bees,” says Eliese. More important than preaching only chemical-free treatment, Eliese believes beekeepers should be making critical decisions based off the facts of their unique situations and “being accountable for the decisions you make in your operation.”

Most of Eliese’s public outreach encourages different communities to start their own bee clubs. “I really encourage a self-sufficiency model of leadership, and organic evolution of whatever their club desires,” says Eliese. “Kind of like a swarm, you give them all the resources they need to be viable but it’s up to them to actually drive.”

And for those starting up beekeeping as a hobby, Eliese recommends joining a community of beekeepers “to kind of mimic a hive because it can be extremely overwhelming to enter a box of insects that maybe want to kill you,” says Eliese. So it’s nice to go through that experience with someone else.

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Alwyn "Oxx" Simeina: For the Love of Raw Honey

Alwyn "Oxx" Simeina grew up eating raw honey in the U.S. Virgin Islands and has been chasing the taste of a particular "batch" of comb since Hurricane Hugo hit St. Croix and downed a tree that contained a hive within it. "I never could find [the taste again] but I keep trying," says Oxx and from there, his desire to keep bees grew.



Figure 2.13.1 Alwyn "Oxx" Simeina, Oxx Beekeeping

Oxx is a self-taught beekeeper and owner of [Oxx Beekeeping](#) in Kissimmee, Florida and he is a big proponent of chemical-free beekeeping. He started his self-education by attending seminars and joining a local beekeepers club and now he provides advice to his local community, including some of his former mentors.

Oxx first started beekeeping about five years ago. He says, "I couldn't really find any mentors that looked like me," because everyone in the beekeeping world were mostly older white men. "When I entered my first year, that's when I decided to just read about [beekeeping] and the science about it, and my mentors were actually women."

Today, Oxx has about 22 hives and provides classes and seminars to his community. As time progresses, he's seeing a shift with more people of color and women expressing interest

in becoming beekeepers. Kids in the community have expressed a particular affinity for the classes and “the whole concept of people actually taking care of the bees,” says Oxx. “And the smoker...they always get excited about that, I don’t know why.”



Figure 2.13.2 Alwyn “Oxx” Simeina (left), Oxx Beekeeping

Oxx’s approach to beekeeping is to be as natural as possible, encouraging people to study “the natural ways of the bee and imitate that [because] we’re already being unnatural by putting them in a box with frames.” In his hives, Oxx foregoes any chemical treatments and

instead uses essential oils like lemongrass, oregano, eucalyptus, and lemon for mite control. He is also looking into the mycelium from mushrooms to help stop the spread of viruses from Varroa mites and hive beetles.

In his classes, he explains that when companies come to spray chemicals on the grass, the bees drink the chemically-treated water and get sick. Once people understand the process of this, participants tend to try not to use chemicals and instead go for non-chemical treatments like the water with soap method. Since offering classes, he’s seen a shift in people starting to grow gardens instead of just growing grass.

A major challenge to beekeeping in this urban area is when bees move into people’s houses due to loss of habitat, which is one of the things Oxx is working on in addition to providing classes and seminars. Oxx offers a service to come take care of bees in people’s yards — bee rescues — which can be a trying task. “A lot of times bees don’t survive because they’re in a stressful situation [like] trying to extract them out of a wall.”

These are highly stressful situations for the bees, which can weaken them further when infected with pests.

For the future of beekeeping, Oxx really wants to see new beekeepers get away from the treatments. "I would love to see people get away from chemicals and all these treatments, giving the bees sugar water, and be more sustainable," says Oxx. Oxx teaches beekeepers not to take all of the honey when extracting from the comb if they can help it, take a bit for yourself and leave a little bit of honey for the bees. "Let the bees enjoy their honey," he says.

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Jasmine Joy: The Mindfulness of Beekeeping

Jasmine Joy started beekeeping when she was living on the North Shore of Oahu, Hawaii. She started working at Honey Girl Organics in 2011 because her best friend was working for the company that makes organic skin care with all products from the hive – beeswax, honey, propolis, and royal jelly. That friend eventually left and Jasmine took over the managerial duties of manufacturing the skin care line. She learned how to bee-keep and remove wild hives from homes through the company as well.



Figure 2.14.1 Jasmine Joy, Believe Hawaii

A year later, in 2012, Jasmine started [Believe Hawaii](#), an organization that provides educational outreach, habitat restoration and honey bee rescue on the island of Oahu. In 2015, Jasmine became a partner of Hoa Aina O Makaha, a nonprofit which she describes as “not just a farm” but a “sacred sanctuary that is right next door to an elementary school.” By becoming a member of this farm, Jasmine got her start in teaching third graders about the life cycle of a honey bee, the different bees

in the hive, and how bees communicate. The name of this program is called the Pollinator Program. About 100 kids participated in the program during its first year.

“Mindfulness is what really fuels my company, my mission, and what I believe,” says Jasmine. “[In] everything that my company does, mindfulness is embraced.” And Jasmine embraces beekeeping in many aspects of her life. Jasmine’s colleague studies the endangered Hawaii yellow-faced bee, *Hylaeus*, a species found only in Hawaii, and with him, she started a nonprofit called Bee Collective. Between Beelieve Hawaii and Bee Collective, Jasmine gets to work with children, young adults, and older adults on a regular basis.

Jasmine advises new beekeepers to find a mentor they respect who share the same values and energy. For those on an intermediate level, she advises seeking out a good place for an apiary and having two or more hives “which allows you to experience how each colony has a different personality and works as a superorganism,” says Jasmine.

For her own business, Jasmine is a treatment-free beekeeper. Below most of her hives, she keeps an “oil bottom board,” which is a tray you can pull out and pour mineral oil into. Above that is a sheet of mesh separating the bottom board from the hive box with holes only small enough that the African Small Hive Beetles can fall through. Another method of pest management Jasmine uses for mite control is organic powdered sugar. While she says it’s likely that every hive in Oahu has mites, responsible beekeepers should take care of their bees as best they can, “giving them the best environment that you can provide for them,” she says.



Figure 2.14.2 Jasmine Joy, Beelieve Hawaii

“I let my bees do their thing,” says Jasmine. “I have a real spiritual connection with them and I’m more of that kind of beekeeper – very intuitive.” If she observes a colony not doing well – that is not bringing in any nectar, not making comb for the queen to lay, Jasmine will concoct a “bee tea” for them with herbs, vitamins, and sugar water.

Beekeeping in Hawaii is unique because, as a tropical climate, there really is no “off season.” However, climate change is evident here as it is

anywhere else. Typically, half of the year is hot and dry on Oahu, and the other half is cooler, wetter weather but Jasmine has seen the typical second swarm that ends in mid to late summer go all the way through to October. “My phone was ringing for wild swarms past the season, and other bee removalists are seeing this as well.”

In addition to climate change, Jasmine notes that beekeeping can get rather territorial. “The ways of the old patriarchy...of wanting to segregate from everybody and work alone...is falling apart.” On the one hand, she understands this from the perspective that beekeeping for her is “a very intimate time. It’s like my church.” But on the other hand, she acknowledges that “it’s important that [beekeepers] come together and teach each other different ways because we can all become better.”

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Kirk Webster: Looking "Organically" at the Broader Landscape of Bee Health



Figure 2.15.1 Kirk Webster (second from left, standing)

When [Kirk Webster](#) finished high school in Vermont, he got into a toboggan accident that winter and while he was “moping around,” as he says, someone gave him “this little book about bees and beekeeping.” That spring he went back to the Mountain School in Vershire, Vermont and then to visit family in New Jersey where he met

Myron Surmach, a beekeeper with about 30 hives at his house. And that’s how Kirk’s interest in beekeeping really sparked.

“I worked right here near where I live now with the Champlain Valley Apiaries,” says Kirk. “And I worked in Canada and Ontario for a beekeeper there, but then I was injured in that accident and my back was hurt pretty badly and I couldn’t do the heavy lifting of beekeeping.”

He took a little break and then ended up going to school on the West Coast and three years later, when he recovered and could do physical work again, he moved back to the East Coast and ended up in Concord, Massachusetts, where he started the apiary he has now. That was in the early ‘80s. Here he happened

upon a few neglected beehives and volunteered to take care of them and the bees did really well, which rekindled his interest. Kirk's beekeeping business started in Massachusetts and stayed there for four years, until he moved back up to Vermont.

Since Kirk became a full-time beekeeper, he's operated under the landscape of the Varroa mite problem. His response to the crisis was different than most. Before becoming a beekeeper, he had a lot of exposure to organic farming and by "sheer serendipity" he met some of the "very first pioneers of the organic farming movement in North America who in turn had been inspired by the pioneers of organic farming in England." In one way or another, Kirk tried to apply those sample principles to his beekeeping.

Kirk remembers a time when the American beekeeping community "used to be the one part of the agricultural community that was uniformly opposed to the pesticides and agricultural chemicals." And then what felt to him "just like overnight, the beekeeping community became dependent on pesticides [because of the whole varroa mite problem]."

While Kirk's methods seemed unconventional to some at first, he says he's always tried to share any progress he's made with the greater beekeeping community and the public, mostly through his writing. An unexpected side to the introduction of the varroa mite problem is that there are "grants out there in the millions" for honey bee research because "people realize the threat to our food supply," says Kirk. "They really do care about the bees and being better," but it's a tough situation to be in because the agricultural science community is "really oriented around industrial agriculture and largely funded by it." And often without any "huge interpretation by science," any advice offered outside of the "official people who are paid to solve these problems...doesn't look very good for them when people living in a barn somewhere in New England figure out a good solution."

Much like [Jasmine Joy](#), Kirk emphasizes the importance of

focusing on the health of the bees. Kirk sees the “real existential threats to beekeeping [as] the poisoning of the environment and the loss of habitat for honey bees.” Looking at this broader picture, it “doesn’t matter how successful people are breeding bees that can coexist with varroa mites if the environment bees are living in [is] becoming more and more poisonous to them.”

Kirk has always gone the treatment-free method with his bees and he encourages new beekeepers to do the same, if they can. In addition to knowledge sharing, Kirk offers an eight-day workshop to a small group of folks to learn about the whole queen rearing cycle. Much like Jasmine, Kirk suggests new beekeepers find a good mentor and start off with more than one colony, especially because “almost nobody succeeds in keeping all their colonies alive every year.”

“Irrespective of what kind of stock you might have, just learning the basic process...the opportunities and possibilities from making your own new colonies...[goes a] really really long way toward...making sure you can have success,” says Kirk. He continues, “Splitting colonies and making new ones is helpful to both the parent colony and the new colonies in terms of their mite populations.” This practice enables you to take advantage of certain opportunities, like if you want to try a different stock from someone else.

Kirk recommends for any beekeeper, hobby or commercial, that producing their own replacement colonies is a crucial step. And if you end up with extra colonies you don’t need, “there’s just so many people in the Northeast who want bees and can’t get local bees,” that you could sell them or give them and “help out the community that way,” advises Kirk.



Figure 2.15.2 Kirk Webster

While Kirk goes treatment-free in his hives, he sees the frustration in the blanket advice of going treatment free for everyone especially for those beekeepers who only have one location. “Any queens that you raise will mate with other bees around you,” says Kirk and, “most of those bees are being treated...and haven’t been

selected for mite resistance.” So, that’s definitely a challenge.

Kirk believes the “best thing any of us can do to help honey bees is to encourage and support organic farming any way that we can” because “the difference between organic farming and industrial agriculture is just like night and day for the bees.”

“We have to plant flowers along the road,” says Kirk and “when you start to have whole farms that are clean and healthy for the bees, that provides that much even if it’s not providing their entire foraging area.”

In general, Kirk sees a need to utilize honey bees as “indicators of the total health of an environment. So, I think we should focus more on that.”

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Michael Palmer: Queen Rearing and Other Advice for New Beekeepers



Figure 2.16.1 Michael Palmer, French Hill Apiaries

[Michael Palmer's](#) beekeeping career started in 1974 when he took a beekeeping course and started off with just a couple hives from Bedford, Quebec, Canada. In 1979/1980, he bought a hundred hives from Better Bee and bought nucleus colonies (nucs) from a friend because back then, prices were pretty low. By 1982, he bought another

hundred hives and was up to 200. During this period, he was working the fall, winter, and spring in the sugar woods and when he was done with that, he went to work in an orchard in New York state where they had 500 hives, which then put him at over 700 hives. Michael worked for them for four years and then bought their bees.

By 1992/1993 a few years after tracheal and Varroa mites became a huge problem, Michael lost a lot of his bees. In 1998, he went to visit Kirk Webster in Vermont and “that’s where the real change [was] for me,” says Michael, “to be able to raise my own [queens].” Michael says when you’re trying to run a commercial operation, you can’t spend all your money on

something you can make, so his visit to Kirk Webster's operation got him started on raising his own queens. From then on, he saw the quality increase.

Michael's current setup includes a mating yard in the middle of about five to six of his apiaries where he gets his drones and where he tries to put good stock. Michael does not buy queens. "If I buy a queen or trade with someone, it's for breeding purposes, not for production queens," says Michael.

Since becoming a beekeeper, Michael has shared his nuc and queen rearing project information with everyone, largely through YouTube videos. He's really pleased at how many people are now wintering nucleus colonies. He also feels fortunate in how much he gets to travel. "We go all over the world doing talks on bees and wintering nucs and raising queens," says Michael. "Two weeks in New Zealand, three weeks in England...it's pretty amazing [to] meet all the beekeepers and see what they do and their differences."

Much like [Brian](#) and [Jasmine](#), Michael has seen how beekeeping has "pulled [many a person] up out of the hole they were in [giving] them something to focus on." He says beekeeping is "one of the best forms of meditation that you can have...the movement and the buzzing and everything else in the world disappears." He continues, "It's also like communion, both meditation and communion. It's incredible."

To new beekeepers, Michael suggests joining a bee club, getting a mentor, and keeping good records. "After that, it's still a lot of experimenting and [hands on] learning" says Michael, which is why he emphasizes getting a good mentor.

Despite some beekeepers' belief that feeding bees sugar is not healthy, Michael will tell anyone that "you can't be afraid to feed sugar if they are starving." And he also believes that as far as varroa mites go, it's wonderful if some folks are not using treatments for mite control but that we must not "forget we are in a community here and when your colony crashes from varroa mites, it spreads varroa mites all over the neighborhood."

Michael's approach to beekeeping also differs from some of the other folks we've heard from in the sense that he says, "You can't just walk away from your bees. It takes work. It takes investigation, it takes looking at them" on a least a regular basis of once a month or more. Michael is also skeptical of anyone trying to run a commercial operation and going completely treatment free and potentially losing 50-75% of their bees each year.

A major challenge nowadays is that "everyone wants to have bees," says Michael, and a major concern he has with new beekeepers is when they are unaware of the potentially harmful and unresearched activity they can get into. For instance in buying used equipment, new beekeepers might not know what American Foulbrood disease is, and so they buy "old equipment out of a barn putting it out there, putting bees in it, [and] the colony dies of American Foulbrood."

He thinks eventually we'll find a healthy solution for widespread mite reduction. "Over time we are developing traits that are going to help," says Michael. "So that's the hope."

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Part 3: Tools and Resources for New Beekeepers

This section of the text contains practical guides and resources for beekeepers such as:

1. [A Hive Inspection Sheet](#)
2. [A Hive Inspection Journal](#)
3. A guide to creating an [Apiary Action Plan](#), or a plan for starting and maintaining an apiary based on the principles of Holistic Management
4. [Wintering Honey Bees](#)
5. [End of Year Beekeeping Evaluation](#)
6. A [beekeeper's calendar](#) for the year that you can integrate into your Google Calendar
7. A [resource list](#) for new and beginning beekeepers
8. A guide to [Graft Free Queen Rearing](#) for intermediate beekeepers

These practical tools are meant to support your beekeeping journey, and empower you to find, adapt or create the tools that work best for your practice. I use these tools in my own teaching and want you to have access to them too. Use these tools as you see fit, adapt them for your needs or use them to co-create new tools with your collaborators. Beekeeping is a practice best done in community so we can share ideas, resources and skills. Like all practices, we improve when we engage with the practice. We improve when we engage mindfully, plan our actions, reflect on what worked and try new

strategies based on our learning. These tools invite you to do just that.

Hive Inspection Sheet

Download and print the [Hive Inspection Sheet](#) as a PDF. This worksheet was adapted from the work of *Erin MacGregor-Forbes* and Northeast Sustainable Agriculture Research and Education (NESARE).

Date:	Excessive Drone Cells: No Yes
YARD:	Drone Population Estimate:
Hive ID:	Low (30) Average 30-100 High 100+
Weather Today:	Queen Cells: No Yes
	Along Frame Bottom # _____
Weather Recently:	Converted Worker Cell Frame # _____
	Food Stores:
Inspector:	
Next Inspection Due:	
Hive Temperament (circle one):	
Calm Nervous Aggressive	
Located Queen: No Yes	
Marked? No Yes Color _____	
Replace Queen – Date _____	
Laying Pattern	Disease / Pests:
Number of frames filled with brood: _____	Yes/No Disease
Beautiful – Solid and Uniform	Chalkbrood
Good; Describe _____	AFB
Hygienic – Spotty due to Hygienic Behavior	EFB
Comments: _____	Varroa Mites
Mediocre – Intermittent or Random Poor – Spotty	Tracheal Mites
Additional Comments: _____	Small Hive Beetles
	Deformed Wing
Eggs Present: No Yes	Hairless Bees
Additional Comments: _____	Stunted, Other, Unknown
	notes: _____

Population: Heavy Good Moderate Low	
Number of frames full of bees: _____	Medications:
Rotated Frames in Brood Chamber	Added Date: _____
Added Additional Hive Body	Remove Date: _____
Split Hive (new hive #): _____	Type of Treatment: _____
Swarming Imminent – needs monitoring	
notes: _____	

Created by Angela Roell, Beekeeper for SARE grant 2014, www.yardbirdsfarm.com

Figure 3.1.1 Hive Inspection Sheet form page 1

[NonCommercial](#)) license

- ARoell, Hive Inspection Sheet Page 2, SARE 2014 © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license

Hive Management Journal

Download and print the [Hive Management Journal](#) as a PDF.

Hive Health Book

Beekeeper: _____

Address: _____

Phone: _____

Email: _____

Figure 3.2.1 Hive Management Journal Page 1

Apiary Action Plan

Download and print the [Apiary Action Plan](#) as a PDF.

Download and print the [Apiary Action Plan Steps](#) as a PDF.

Apiary Action Plan Guide created by Ang Röell, They Keep Bees, Winter 2020



Figure 3.3.1 Ang Roell holding beehive frame

In this activity, you will apply all you've learned in the field about biology, management and practice to create an Apiary Action Plan.

In this plan, you'll consider and articulate details about your goals as an Apiculturist (beekeeper), set goals for your apiary, identify cost, think about siting new and mating yards, and make a decision about management / practice.

You will use the model to create an apiary expansion plan for

how you will systemize your current apiary and expand upon the practices within it. This will include adding a queen rearing system or increase management plan, creating a calendar and record keeping system, and adapting a new management strategy or changing systems that are not working for you currently.



Figure 3.3.2 Dandelions

Step 1: Set A Holistic Goal for your Apiary

What is a holistic goal? ([Source: Purple Pitch Fork](#))

The term “holistic goal” comes from a school of thought called Holistic Management. It is a three-part goal describing the quality of life desired, the forms of production to get there, and the future resource base that the forms of production depend on. Whether or not you practice Holistic Management, a written goal can be a powerful instrument for building understanding and cooperation in an apiary.

The power of Holistic Management process lies in the goal. Work that fulfills the commitment we have to ourselves, our families, our environment and our communities can only succeed in the context of a journey toward a holistic goal.

The holistic goal is a living document. In the journey of our lives, without knowing where we are going, we cannot know how to begin. A goal provides us with the knowledge we need to move with confidence, because with a goal: We know the direction to go (plan); We have a way to measure our progress (monitor); We can correct our course when things go wrong (control); We can get back on course when big things go wrong (replan). A goal doesn't have to be beautiful. You don't have to type it on the computer with four different fonts, bolded and italicized. The sentences don't have to be complete. The motives don't have to be lofty. The only requirement is that it works. The most challenging aspect of formulating a written holistic goal is actually doing it. The process has none of the instant gratification of chopping wood, extracting honey, or pulling weeds, (or even the gratification of financial or biological planning) but it guides and informs our decisions about how, when, and whether to do each of these tasks.



Figure 3.3.3 Goal Setting Framework slide

Your Holistic Goal Answers These Questions:

1. What do you want?

2. How will you get there?

3. What “being state” do you wish to bring to the project? What energy do you wish to bring to the work?

4. What are the needs of the project? What are the yields of your project?

5. How do they impact your close friends, family or collective, community, world?

6. Who/what are your allies/resources?

7. What knowledge do you bring?

8. What knowledge do you need? How will you acquire it?

9. What are your predators or impediments?

10. What relationship do you want with your bees? What impacts will your choices have on the bees, the greater ecology?



Figure 3.3.4 Apiary

Step 2: Creating a Plan to Start or Expand an Apiary

1. What do you need to expand an apiary? Make a list of all

of the items you'll need. What is your start-up cost?
OR What is your expansion cost?

2. Make a list of the items you need for: protective equipment, hive manipulation equipment and pieces of the hive. Outline the costs. How will you purchase these? Through which suppliers?

3. How many colonies will you start with or expand to? Why?

4. Discuss the pros and cons of 2 ways you could obtain bees to expand a beekeeping hobby or operation.

5. What size brood and honey super boxes would you use for expansion?

6. Will you customize any equipment? Which parts? How?

7. What would be advantages of customizing some of the requisite pieces of equipment?



Figure 3.3.5 Apiary

Step 3: Site the Apiary

1. Where will you establish your apiary or new yards?

2. Select a location in your area on which you'd like to site honey bees. Describe the best features of the site. What might you do to overcome the most negative aspects of the site?

3. What infrastructure do you need in place to keep bees at this location?

4. What considerations of neighbors might take precedence over beekeeper's point of view?

5. How will you approach neighbors and institutions to discuss apiary location?

6. How will you come to an agreement with neighbors about your practice (beekeeping) and their pesticide applications? How will you address fears/anxiety about having an apiary sited nearby?



Figure 3.3.6 Standing among beehives

Step 4: Managing the Apiary

1. Outline 1 season of management from April-November below. What tasks do you need to complete each month? Week?

2. How will you implement each step month-to-month?

3. When will you inspect?

4. What will you look for in Spring, Summer, Fall, Winter?

5. What is your treatment and/or manipulation plan? Why?

6. How did you decide upon this plan? Cite a minimum of 5 resources that informed this decision.

7. Where will you purchase your stock? How? Why?

8. How will you keep records? Count mites? When? What will inform your treatment decisions? Cite 2 resources for determining what threshold of mites should be present to determine treatment.

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- Dandelions © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license
- Goal Setting Framework © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license
- Apiary at dusk © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license
- Distance shot of apiary © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license
- Close-up of apiary © Ang Roell is licensed under a [CC BY-NC \(Attribution NonCommercial\)](#) license

Wintering Honey Bees

First, ensure that the bees have enough honey stores to get through the winter, generally considered to be 60-90 lbs of capped honey (one deep or two mediums of wall-to-wall capped honey) in this area for a typical sized colony in standard Langstroth equipment; if your hives are still light in mid-September, feed them with 2:1 syrup (up until mid-October) to get them up to that weight. **Mouse guards need to go on by early September.**

Wrapping hives with black tar paper can help, but is not absolutely necessary (it's also not a detriment); as someone said, it provides solar gain in the early spring, but has negligible insulation value. A wind break can also help, but is not necessary; a friend of mine uses sections of stockade fence that he bought at Home Depot; my hives are on the south side of a stand of red cedar trees, which provide a natural wind break.

Ventilation is key if you are using standard Langstroth equipment. It doesn't have to be a lot – the standard notch in an inner cover is enough, even with a solid bottom board and a small lower entrance. Top insulation is critical, between the inner cover and the outer cover; otherwise the moisture in the air in the hive will condense inside the top, drip down on the bees and kill them; the ideal insulation is rigid foam insulation (1" or 2" thick) cut to the size of an inner cover; Homasote does not do the job. I alternatively use quilt boards, but they are a bit more complicated. The foam insulation and the notched inner cover accomplish; Michael Palmer, a highly respected commercial beekeeper in northern Vermont, demonstrates this set-up on YouTube in [Keeping Bees in Frozen North America](#) starting at about 54:40, though the entire presentation is worth watching.

Finally, I don't want to reignite the debate about Varroa, but

for anyone who might care, if you focus on the above steps and your colonies either abscond by late fall or don't make it through the winter, you almost certainly will have lost them due to varroa and the viruses they vector. Randy Oliver describes this issue in [Understanding Colony Buildup And Decline: Part 1 – Varroa and Late Season Collapse](#), which was published in the *American Bee Journal*. Monitor mites using an alcohol wash and consider your treatment options if the count is more than 3% at this time of year.

End of Year Beekeeping Evaluation

What Worked

This is the easiest and most fun question – what worked? Knowing what went well will help you to decide what to do next year. What went well or better than expected?

- Did a certain hive outperform the others?
- Did one yard produce more honey than the others?
- Did your colonies survive over winter?
- Was a particular Queen especially productive?
- Did you successfully split your hive(s)?
- Did you sell more honey at one market than another?

What Didn't

Looking at our failures is never fun, but it helps us learn and grow. What did you do that didn't go as well as planned?

- Did you use a certain feeder that leaked or ran out too fast?
- Did you not feed a colony that needed it?
- Did you pull honey too soon or too late?
- Did you wait too long for swarm management?
- Did you lose or kill a Queen?
- Did a hive get robbed out?
- Did you experience disease or pests?
- Did you keep a record or log?

This, of course, is not a full list of questions, just a few to help get you on the right track.

What Do I Want To Do Next Season?

What is something that you'd like to try next year?

- Did you read about a new technique you'd like to try?
- Do you want to experiment with a new hive style?
- Do you want to try new equipment?
- Do you want to dabble in Queen rearing?
- Do you want to collect swarms or cut-outs next spring?
- Do you want to sell Nucs or hives next year?
- Do you want to expand to new bee yards?
- Have you signed up for [free insurance through the USDA](#)?

The Beekeeper's Year

[The Beekeeper's Year: A Google Calendar](#) – integrate into your existing Google calendar

Click on the image below for link to the PowerPoint version.



Figure 3.6.1 Beekeeper's Year Field Guide cover.

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Resource List

Adapted from Boston Beekeepers Club/Beekeepers of Suffolk County & The Benevolent Bee Created for Organic Bee School 2014 (with some additions)

Free Online Manuals:

[Beekeeping Basics](#): various resources available, some free, some with associated cost on this online catalogue

[A Practical Manual of Beekeeping](#): UK; focuses on IPM; has section on going organic (p.264); written in a very accessible, personable way, yet also academic in content

[Tutorials on Beekeeping in Latin America](#) and [Beekeeping Manual in Spanish](#)

Places to Get Questions Answered:

[Boston Beekeepers Club listserv](#)

[Organic Beekeeping Forum](#)

[Beekeeping Forum](#)

[International Beekeeping Forum](#)

Accessible, Informative Resources by Some of Treatment Free Beekeeping's Best:

[Beekeeping Naturally by Michael Bush \(Nebraska\)](#)

[Leominster, MA bee experts Dean and Ramona](#)

Beyond Langstroth – Online Resources for Top Bar, Warre, Observation Hives:

[Photos & Introduction to different types of hives](#)

Top Bar Hives:

[Top Bar Hives on *Beekeeping Naturally*](#)

[Extensive resource and forum for natural and top bar hive beekeeping](#)

[Sam Comfort's anarchist approach to top bar hive beekeeping \(NY, FL\)](#)

[Informative resource for top bar hives](#)

[Top Bar Hives blog \(Gardiner, ME\)](#)

Observation Hives:

[Boston-based organization providing detailed information on building observation hives and managing them in schools](#)

Warre Hives:

[An extensive resource on Warre hives, including a link to inventor Abbe Warre's book, *Beekeeping for All*, which includes construction and management instructions](#)

Miscellaneous Informational Sites:

[Bad Beekeeping – links to various topics on beekeeping](#)

[Swarm catching videos and information on foundation-less beekeeping](#)

[Information on all beekeeping topics](#)

[Beekeeping through the eyes of a biologist](#)

[Beginning Beekeeping](#)

[Basic Beekeeping blog](#) and [Basic Beekeeping podcast](#)

[The Beekeepers' Library, an extensive list of online resources compiled by the Strathcona Beekeepers Association in Vancouver, B.C.](#)

Websites for Organic Control of Pests and Diseases:

[Lab that accepts dead bees or comb with brood to be tested for disease \(free\)](#)

[Organic, natural/small cell beekeeping](#)

[Organic beekeeping forum](#)

[Drone trapping \(varroa control\)](#)

[Mid-Atlantic Apicultural Research & Extension Consortium \(not organic but many leads\)](#)

[Data-driven blog and information on disease monitoring](#)

Beekeeping Books:

Guides to Beekeeping:

[The Idiot's Guide to Beekeeping](#) Dean Stiglitz & Ramona Herboldsheimer (2010)

[Natural Beekeeping: Organic Approaches to Modern - Apiculture](#) Ross Conrad (2007)

[The Practical Beekeeper: Beekeeping Naturally](#) Michael Bush (2011): much of this material is available for free on his [website](#)

[The Barefoot Beekeeper](#) Phil Chandler: guide to Top Bar Hive construction and management (see [website](#) for lots more from Chandler)

[The Thinking Beekeeper: A Guide to Natural Beekeeping in Top Bar Hives](#) (2013) Christy Hemenway

[Keeping Bees with a Smile: A Vision and Practice of Natural Apiculture](#) (2013) Fedor Lazutin (Warre hive info)

[The Beefriendly Beekeeper: A Sustainable Approach](#) (2011) David Heaf (good resource for Warre hive tenders)

[Observation Hives: How to Set Up, Maintain and Use a Window to the World of Honey Bees](#) (1999) Thomas Webster & Dewey Caron

Traditional Focus:

[Beekeeping Basics](#) MAAREC (course book, purchase a PDF [here](#))

[The Beekeeper's Handbook](#) (a good go-to manual for pretty much anything, now in 4th ed.)

[The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard or Garden](#) Kim Flottum (2010 revised edition): focus on all medium hive bodies

[The ABC and XYZ of Bee Culture: An Encyclopedia of Beekeeping](#) A. I. Root Company (look for old versions for more natural management)

[Hive Management: A Seasonal Guide for Beekeepers](#) Richard Bonney

[Beekeeping: A Practical Guide](#) Richard Bonney

[New Complete Guide to Beekeeping](#) Roger Morse

[The Beekeeper's Bible](#) Richard Jones and Sharon Sweeney-Lynch

[Beekeeping for Dummies](#) Howland Blackston

**Books That Take a Closer Look at Bees and Beekeeping:
Science/Behavior:**

[Honeybee Democracy](#) Thomas Seeley (Cornell expert on swarming behavior) 2010

[The Buzz About Bees: Biology of a Superorganism](#) (information on bees biology, communication & more)

[The Wisdom of the Hive: The Social Physiology of Honey Bee Colonies](#) Thomas Seeley (1995)

Historical Science/Behavior:

[The Dancing Bees: An Account of the Life and Senses of the Honey Bee](#) Karl von Frisch (1953) – written by the first person to interpret the meaning of the waggle dance

[Langstroth's Hive and the Honey Bee: The Classic](#)

Beekeeper's Manual L.L. Langstroth (1878) – written by the inventor of the Langstroth hive; more of a chapter book than a go-to manual

Art/Creative Portrayal of Factual Info:

The Pollinator's Corridor Aaron Birk – graphic novel on restorative ecology

Other Books:

The Queen Must Die and Other Affairs of Bees and Men William Longgood – an ethnography of the beehive

Robbing the Bees: A Biography of Honey The Sweet Liquid Gold That Seduced the World Holley Bishop (2005)

Beeconomy: What Women and Bees Can Teach Us About Local Trade and the Global Market Tammy Horn (2011)

The Beekeepers' Lament: How One Man and Half a Billion Honey Bees Help Feed America Hannah Nordhaus (2011)

Life of the Honeybee Heiderose & Andreas Fischer-Nagel – closeup photos, good for kids or educating

Journals:

Bee Culture published by A.I. Root Co.

American Bee Journal by Dadant Co.

Graft-Free Queen Rearing by Morris Ostrofsky

This resource was created by Morris Ostrofsky. I've included it here as a resource for people who want to explore queen rearing. Resources like this one, and the encouragement of "friend-tors" like Sam Comfort helped me take the plunge into rearing my own queens. Raising queens helped me develop a deeper understanding of the hive, and helped me shape my own beekeeping practice. Like anything on our learning edge, learning how to raise queens may make you question your skills, knowledge and understanding, but it will ultimately help you develop a deeper understanding of the hive's rhythms.

The [Graft-Free Queen Rearing document](#) is also available for download as a PDF.



Figure 3.8.1 Honeybees

Many beekeepers reach a point in their beekeeping experience where they are comfortable with the basics and are seeking a new challenge. In an environment in which beekeepers have to deal with varroa and diseases and are dissatisfied with commercial queens there are reasons to raise your own queens. However, for many beekeepers the idea of grafting and producing their own queens is intimidating. The purpose of this paper is to offer four simple methods of queen rearing that do not require grafting. I will explain how a few high quality queens can be raised without special equipment or tools by a beekeeper with just a few years of beekeeping experience.

To quote Dr. C.L. Farrar, USDA Honey Bee Research Lab Leader, Madison, Wisconsin, "Below average queens living in a great environment will out perform a great queen living in a poor environment every time." It is possible to create a great

queen if they are well fed and raised in a bountiful environment.

In the last few years a common complaint I hear is the poor quality of queens that are available e.g., poorly mated. Another frequent complaint is the lack of acceptance. Not only is the acceptance track record poor but even when the queens are accepted, too many are superceded. The queens you purchased from half way across the country often do not perform as advertised in your own back yard. Locally produced queens are well adapted to your environment. To quote Kim Fottum, editor of Bee Culture magazine, "As Mark Twain might have said, 'The difference between queens you buy and queens you raise yourself is almost always the difference between light and lightning.'"

Before describing various methods of graft free queen rearing, I would like to discuss some of the benefits of raising your own queens. One is genetics. Many beekeepers are wisely looking to genetics as a means of a long term solution to solving the problems associated with the exotic pests and diseases. When you raise your own queens, you can select for desirable traits e.g. disease resistance, hygienic behavior. Usually everyone has a favorite hive or knows a fellow beekeeper that has a hive with desirable traits. The queens in these hives are the cornerstone of improving an apiary.

Genetics is an excellent foundation. You can build on this foundation by controlling the conditions in which the queens are raised by selecting the genetic stock, using chemical free comb and ensuring that they are well fed as they develop.

Finally we all accept the fact the young queens are more productive and less likely to swarm. Having extra queens readily available means being prepared for emergencies; e.g. accidental death of the queen. Because of these reasons, many beekeepers want to take charge of the situation and raise their own queens. Most erroneously assume that grafting is the only way to accomplish this. However, this is not the case. There are

multiple methods of graft-free queen rearing. Four methods are presented: Swarm cell, Nucleus, Miller and Hopkins. The reader can choose the method that best suits his/her comfort level and the number of queens desired.

Regardless of the method selected there are certain considerations that are common to all. Time of year is one. Spring and summer are the ideal times to raise queens. Food is available, the temperatures are correct for virgins to mate, and the bees' natural inclination to propagate by producing new queens and swarming takes place. Fall is not the best time to raise new queens. There is less food available to produce a well fed queen. There are fewer nurse bees. Nor is there time for new queens to set up a hive with enough winter stores. But more importantly there are fewer drones available for mating.

Another consideration before venturing into queen rearing is preparation. Populations need to be strong; a decision needs to be made as to which will be the queen breeder (queen mother) and drone mother hives, and what additional equipment is needed. An adequate supply of protein supplements and feeding stimulants should also be on hand. A schedule should be made especially if the Hopkins or Miller methods are used.

All honey bees are not the same. As Charles Darwin correctly pointed out, "Within any population there are variations." Case in point, look at your siblings; unless you have an identical twin, everyone is different. When selecting which hive(s) is to be used for your source of your breeder queens (AKA queen mother, queen mother hive), consider traits that are important to you. This is one of the areas where you have the most control of the quality of the new queens. There are a number of desirable traits you may wish to select for: gentleness, honey production, early build up, hygienic behavior, disease resistance, and good wintering ability. Your experience with your hive(s) will dictate which colony (colonies) you select as the queen mother hive.

Another decision you have to make is the number of queens

you would like to produce. The most limiting factor in any queen rearing operation is the number of available mating boxes. This is an appropriate time to define mating box/nuc for the purpose of this paper. While mating boxes vary in size from as small as 2 full depth frames to 5 full depth frames, I use a standard 5 frame full depth nuc box with a follower board. Using this configuration means no special equipment is needed whether the nuc is used as a nuc or a mating box.

Graft free queen rearing requires between one and four hives depending on the method used. Each will be discussed separately with the corresponding method. At least one mating box/nuc is needed for every queen produced. Early on it will be necessary to decide the number of desired queens and prepare the appropriate number of mating box/nucs.

Overcrowding and better fed queen cells go hand in hand. Ideally the hives you raise queen cells in (cell builder hives) should be overcrowded with lots of young nurse bees. In fact the colony must be on the verge of swarming. To quote Sue Cobey (researcher at UC Davis), "Overcrowding is the secret of success." The objective is numerous and well fed larvae. Feeding is the way to accomplish this objective. The quantity and quality of feeding greatly influences the quality of queens. This is one important way you can produce higher quality queens than those mass produced. "This is an important concept and must not be overlooked." (Sue Cobey at OSBA 2012 conference) According to Sue Cobey well fed developing queens produce more eggs. Feeding the bees a pollen supplement is added insurance that the growing queens will have an adequate amount of protein. Use your favorite pollen supplement. Since you want a population that is booming, start feeding the potential cell builder hives about 2 months before you start raising queen cells.

A large drone population is needed in the cell builder hive(s) in addition to a large worker population. Drones do much more than serve as fodder for bee humor. They are an important, yet

overlooked, part of the mating equation. It takes about 12 to 15 drones to mate with a virgin queen. Think of them as flying gametes.

To build and maintain the population of drone mother hives start feeding them a 1:1 sugar syrup solution with a feeding stimulant at least one month before starting to raise queen cells. Feeding needs to continue until the new queen has been mated. If the bees perceive a slow down in nectar flow; e.g. the feeding, they will stop drone production and also start removing developing drones from the hive. Drone production needs to continue right up to the time the queen is mated.

An additional method to increase the number of drones is the use of green plastic drone comb frames. The embossed cells are drone-sized; larger than the worker brood size. When the queen feels the larger sized cells, she lays an unfertilized egg which becomes a drone. When inserting these frames place them on the edge of the brood area between the pollen frame and the outer most brood frame at approximately the three or eight positions.

In most cases, two drone producing hives will be necessary for every hive that is producing queen cells. If there are other hives within a quarter to a half mile of your apiary, extra drone hives are not necessary. The exception to this is if you're trying to improve genetics. In this case the best hives for producing drones (drone mothers), will be your own. The drone mother hives should be placed a half mile away from the mating boxes/nucs. The reason for moving your own drone mother hives away from your apiary is to avoid inbreeding between virgin queens and their brothers. Additionally you increase the likelihood of matings with selected drone stock. This is because the drones normally form their congregation areas closer to "home" than a half mile. The virgin queens typically fly further away from the home apiary and have a better chance to mate with the desired drones.

The Queen Development chart that follows illustrates the

biological sequence of a queen’s development and mating and explains the “why” and “when” specific manipulations are performed. For example if you were to wait until day 17 to separate the queen cells in a cell builder, you would end up with a single queen. This is because on day 16 the first queen to emerge would dispatch all of her sisters. The beekeeper must be aware of the queen’s development sequence to successfully raise queens. The chart helps to visualize the process and is referenced as the methods are described.

Graft-Free Queen Rearing
Morris Ostrofsky

Queen Development Chart

Stage	Day
Egg	1
	2
	3
Unsealed larva	4 Egg hatches into tiny larva
	5
	6 } Egg fed lavishly on royal jelly during larval stage
	7 }
	8.5 } +/- .5 day; some variation
Capped	8.5 – 9 Note: hive will swarm +/- 1 day of capping
Pre-pupa	10
	11
	12
Pupa	13 } The queen pupa is fully formed. Days 13 – 14 are the
	14 } best times to move cells for distribution
	15
Queen emerges	16
Mating flights	20
Egg laying starts	23 – 30

Figure 3.8.2 Morris Ostrofsky’s queen development chart

Before any queen rearing project can be started, production activities have to be coordinated with seasonal and personal calendars. Seasonal conditions set the pace for raising queens. When the average temperature reaches 69 degrees F, the queen is able to go on her mating flight(s). For example in the

southern Willamette Valley, the average temperature is 70 degrees F on June 1st. This is one degree warmer than the absolute minimum required for a virgin queen to mate. I use June 1st as the focal point for activities I schedule before and after this date. The timing of the mating flight(s) is critical and thus set the pace for the rest of the calendar. Because beekeeping is local, the date the temperature reaches 69 degrees F will vary as will specific calendars.

While most scheduling is flexible, some manipulations are less so. For example once 24-36 hour larvae are placed into the cell builder, the scheduling becomes more rigid. This is the point to make sure your personal schedule does not conflict with queen rearing activities. The Miller method, described later, will include an example of how useful a calendar is in organizing the sequence of steps for this or any other method.

Now that preparation common to all methods has been described, it is time to look at the specifics of the four methods of non-graft queen rearing. While raising queens is the objective, each uses a different approach. Although several of the steps are common to all, each will be presented as a stand alone process. Review each method and decide which is compatible with your goals and confidence level.

Swarm cell method: Ten to 15 quality queens can be produced from swarm cells. While a swarm cell situation can be created by stimulating a hive, the focus here is the situation where you did not plan for swarm (queen) cells but discover them during a hive inspection. You see that the workers have already built numerous, **capped** queen cells.

The Queen Development chart shows that the capped cells you are seeing are at least 8.5 days +/- .5 day old. How do we know this? This is because queen cells are capped over at about 8.5 days +/- .5 day. The presence of capped queen cells indicates that the old queen has already left with a swarm which usually leaves within a day before or after capping. Reduced population is also a clue. This can be confirmed by

observing a reduced worker population in the hive and the fact that no eggs or very young brood are present.



Figure 3.8.3 Worker honey bees on comb

Although you did not actively work to produce these cells, many of the parameters for producing quality queens are present in this situation. The swarm cells have been produced in a hive that has survived winter, is prospering, and has a population that is healthy and vigorous enough to outgrow their home. These cells are well fed and made in a queen right hive.

Now that you have swarm cells, you have to decide how you want to proceed. You can re-queen the hive, make divisions (nucs) or produce mated queens in mating boxes. If you decide that you have enough hives and simply want to re-queen the mother hive, simply cut out all but one or two queen cells. Let the bees raise their own new queen.

To increase hive numbers you will use the queen cells to set up mating boxes/nucs. The goal is two queen cells per division. Sometimes a queen cell is empty and using two cells increases the likelihood of success.

The number of divisions or mating boxes will be largely

dependent on the strength of the hive and the number of available queen cells. In an ideal situation you will find a few brood frames with a couple queen cells each. The frames could be used as is. But more often the queen cells are clustered with many on a single frame. In this case, the cells will have to be removed and distributed to maintain two queen cells per mating box/nuc.

Step 1: Decide how many queens/nucs you can produce after evaluating your resources; e.g. amount of brood, workers to care for the brood, queen cells and availability of mating boxes/nucs.

Step 2: Set up the nucleus hive or mating box using the original hive as the source of materials. If the resources of the mother (original) hive do not support the number of mating boxes/nucs you choose to make, you can supplement using brood and workers from other hives.

Nucleus configuration:

- Three brood frames of capped brood with some cells that are emerging
 - If the queen cells are located singly or in doubles on brood frames, simply include the brood frame with the queen cell(s)
 - If the queen cells have been removed from mother hive frames, provide a space in the nucleus frames that are to receive the queen cells by cutting out a small portion of comb. The queen cells can then be placed in the space and fixed in place with a couple of tooth picks
- one frame of mostly pollen
- one frame of mostly honey
- enough workers to cover the brood and queen cells

Mating box configuration:

- one frame of mostly honey and pollen
- one brood frame with emerging brood
- 2 queen cells
- enough workers to cover the brood and queen cells

Step 3: Leave one or two capped cells and at least a couple brood frames behind in the original hive. One of these remaining queen cells will become the new queen in the mother hive.

Step 4: Cut out well mottled queen cell(s) from the original hive. These cells should look roughly like the shell of a Virginia peanut. Remove some of the surrounding comb along with the queen cell to avoid damage the developing queen. The extra comb also provides a means to attach the cell to another frame. (See next photo) These cells will be used to set up the queenless mating boxes/nucs.



Photo: Morris Ostrofsky

Figure 3.8.4 Honey bees on comb

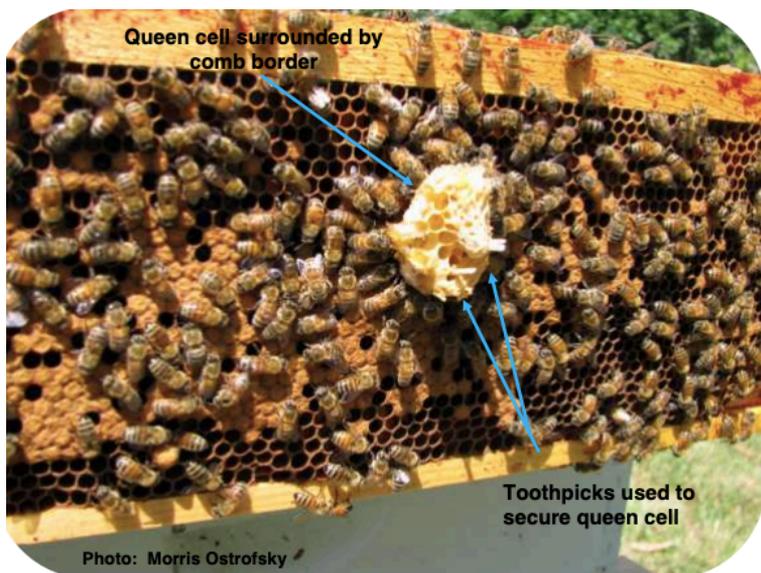


Figure 3.8.5 Queen cell surrounded by comb border

This photo illustrates placement of a queen cell in either a nuc or a mating box. Toothpicks were used to secure the queen cell onto the frame. Note the border of comb that surrounds the queen cell.

Step 5: If the nuc or mating box remains in the same yard as the mother hive, add an equal amount of bees to the nuc/mating box to compensate for the fact that the field bees will drift back to the original hive. Be sure the queen is not included when adding the extra bees.



Figure 3.8.5 Nuc

Step 6: Feed and reduce entrance. Before closing up the nuc, add a shim to create some space above the top bars and then add a protein patty. The nuc's cover should have a 2 to 3 inch circular hole cut into the center. Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the

syrup from sunlight.

Step 7: Continue to feed the bees syrup for about two weeks. Since there are fewer field bees in the mating box/nuc than in an established hive, it is important to feed them even during a nectar flow. Use an entrance reducer to prevent robbing.

Step 8: Wait 3 weeks before opening the mating box/nuc. Since this method starts with queen cells, the waiting is less than with the nuc method. Waiting is the hardest part. But why do we wait? The primary reason is you do not want to lose the virgin queen. Looking at the Queen Development chart you can see that she has not been mated until day 20. Virgin queens are flighty and may get lost if they loft. I like to give her another 10 days to settle down and establish a brood pattern.

Step 9: Evaluate the results. You should find a laying queen with a good brood pattern. If this is the case, transfer the bees into a standard box. If you were not successful, return the frames to the original hive.

Nucleus method:

The Nucleus method produces a single queen and a new hive at the same time. Because it involves the fewest steps and can be done with a minimum of beekeeping experience, it is the easiest approach. It takes advantage of the bees' emergency response to the lack of a queen. When the queenless nuc is set up, the bees will do the rest. Drones and the weather are important indicators that the conditions are right to raise a queen using the Nucleus method. Since drones are essential to produce even a single queen, their presence is one important indicator. When you start seeing drones on the landing board, it is time to start the Nucleus method. The weather is the second important factor. Virgin queens will not go on a mating flight if it is less than 69 degrees F. You need to be aware of when this critical temperature is likely to occur in your area.

I recommend using a five frame nuc box because it works well and is the most efficient use of brood pollen and honey. While the configuration is similar to that of the Swarm cell method nuc, there two differences between them. The most important is the use of a brood frame with eggs or 24 hour larvae. The other difference is that queen cells are not needed.

Step 1: Decide how many queens/nucs you can produce after evaluating your resources; e.g. amount of brood, workers to care for the brood, queen cells and availability of nuc boxes.

Step 2: Set up the nucleus hive using the original hive as the source of materials. If the resources of the mother (original) hive do not support the number of nucs you choose to make, you can supplement using brood and workers from other hives.

Nucleus configuration:

- One frame of mostly honey
- Two frames of emerging and capped brood
- One frame with eggs or 24 hour larvae (up to day 4 on Queen Development chart)

- one frame of mostly pollen
- enough workers to cover the brood and queen cells

Step 3: If the nuc remains in the same bee yard, brush an equal amount of bees into the nuc to compensate for the field bees drifting back to the original hive. Be sure the queen is not included when adding the extra bees.

Step 4: Feed and reduce entrance. Before closing up the nuc, add a shim to create some space above the top bars and then add a protein patty. The nuc's cover should have a 2 to 3 inch circular hole cut into the center. Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the syrup from sunlight.

Step 5: Continue to feed the bees syrup for about two weeks. Since there are fewer field bees in the nuc than in an established hive, it is important to feed them even during a nectar flow. Use an entrance reducer to prevent robbing.

Step 6: Wait at least a month before evaluating the results. Looking at queen development chart you can see that she has not been mated until day 20. Virgin queens are flighty and may get lost if they loft. I like to give her another 10 days to settle down and establish a brood pattern. You should find a laying queen with a good brood pattern. If this is the case, transfer the bees into a standard box. If you were not successful, return the frames to the original hive.

Miller Method

This method is named for Dr. C.C. Miller (1831-1920). One interesting fact is that his interest in beekeeping started after his wife, a complete novice, captured a swarm. Ultimately C. C. Miller gave up his medical practice and dedicated his life to raising queens. With the Miller method approximately nine queens can be produced. The following steps describe the

Miller method to raise queens. An example of a calendar for the Miller method follows the steps.

Step 1: Decide how many queens you can produce after evaluating your resources; e.g. amount of brood, workers to care for the brood, queen cells and availability of mating boxes/nucs.

Step 2: Set up the mating boxes/nucs using the original hive as the source of materials. If the resources of the mother (original) hive do not support the number of mating boxes/nucs you choose to make, you can supplement using brood and workers from other hives.

Mating box configuration: (if raising nucs, refer to the Nucleus method for configuration)

- one frame of mostly honey and pollen
- one brood frame with capped and emerging brood
- 2 queen cells
- enough workers to cover the brood and queen cells

Step 3: Day 1: Construct and insert Miller frame

- Securely fasten four or five triangular shaped pieces of foundation to the top bar of an unwired full depth

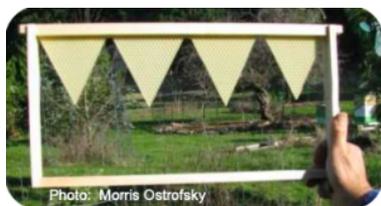


Figure 3.8.5 Miller frame

frame. The triangular shaped sections of foundation should measure approximately 3 inches wide at the top and taper to a point half way down toward the bottom bar. This is referred to as the Miller frame.

- Make sure the queen mother hive is level. The reason this is important is that bees will be building natural, unsupported comb. If the hive is not level, the comb will not be built within the frame.

- Re-arrange the frames to create a space in the center of the queen mother brood box. This is done by removing a little used frame on the outside edge of the brood box.
- Place the Miller frame in the created space.

Step 5: Day 7: (Six days after inserting the Miller frame in the queen mother hive.) Remove queen from the cell builder hive.

- The queen must be removed **one day before** moving the Miller frame from the queen mother hive to the cell builder hive. This **queenless condition** creates an emergency response and must exist if queen cells are to be raised. The bees respond to this emergency by quickly building queen cells.
- Store the queen temporarily in a small nuc. She will be returned to the cell builder hive at a later stage.

Step 6: Day 8: (The next day) Prepare the Miller frame and insert in the cell builder hive.

- Carefully remove the Miller frame while brushing off the bees. The frame must be held vertically because the unsupported comb can break and fall. The foundation will be drawn and a small amount of new comb will have been added. Young larvae and eggs should be seen at the margins of the comb. .
- Place the frame on a flat surface in an area with good lighting, high humidity and out of direct sunlight. The goal is to trim the comb back to the point of recently hatched larvae between 24- 36 hours old. (see photo) As a source of reference the larvae are close to the size of an unhatched egg as per the photo.
- Use a warm, sharp knife to trim off the lower margin of the empty comb and eggs.



Figure 3.8.6 Young larva

The yellow line in the photo below shows what the trim line might look like. Everything below it is removed.

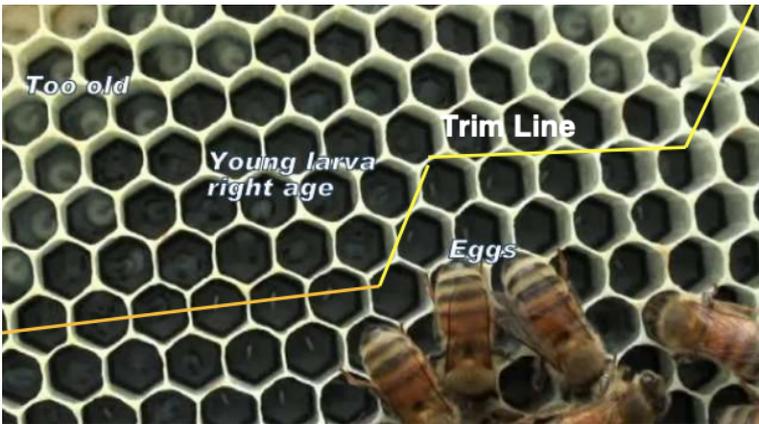


Figure 3.8.7 Trim line of young larva cells

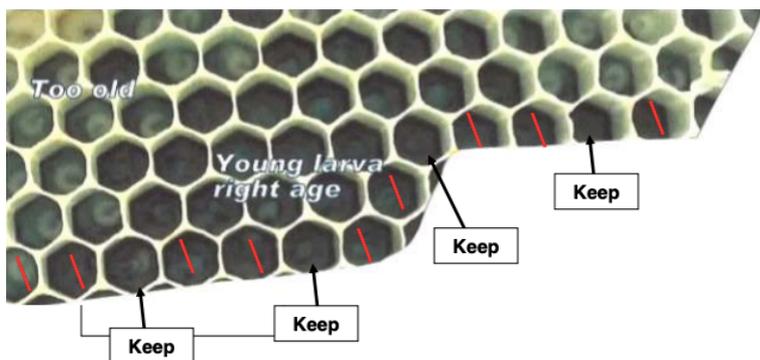


Figure 3.8.8 Larva cells indicating which cells to keep

- Destroy two thirds of the future queen cells left along the lower trim margin. This avoids having too many queen cells too close together. Squash two cells, keep the third, squash two and keep the third, etc.

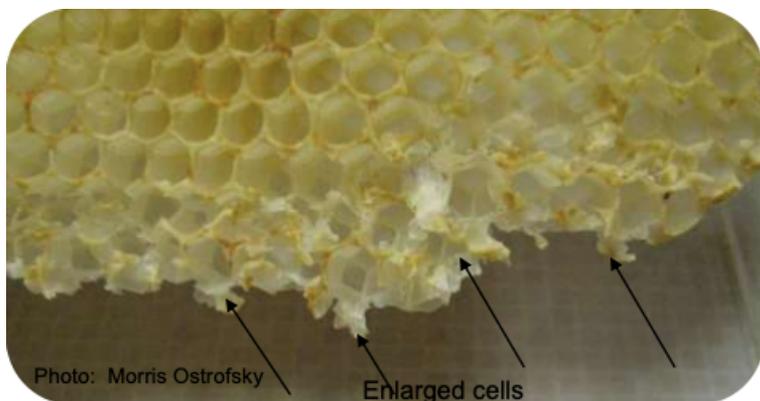


Figure 3.8.9 Enlarged cells

- Enlarge the remaining cells containing the larvae by pushing the lower cell wall downward into a vertical

position This simulates a queen cup and encourages the bees to build queen cells there.

- Transfer the prepared Miller frame into the center of the brood area in the now queenless cell builder hive.

Step 7: Feed and reduce entrance.

Before closing up the nuc, add a shim to create some space above the top bars and then add a protein patty. The nuc's cover should have a 2 to 3 inch circular hole cut into the center. Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the syrup from sunlight.

Step 8: Day 18: (Ten days later) Prepare queen cells for mating boxes/nucs.

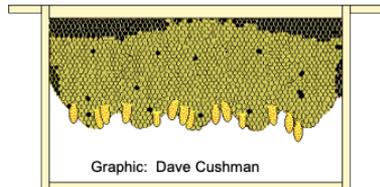
Remove queen cells from the Miller frame. These cells should look roughly like the shell of a Virginia peanut.

Remove some of the surrounding comb along with the queen cell to avoid damage the developing queen. The extra comb also provides a means to attach the cell to another frame.

Step 9: Remove the queen cells and insert them into queenless mating boxes/nucs. (See Nucleus method for more detail.)

- Add enough workers to cover the brood and queen cells.
- Return the original queen to the cell builder hive or leave one or two queen cells to become the replacement queen.

Step 10: Feed and reduce entrance. Before closing up the nuc, add a shim to create some space above the top bars and then



Graphic: Dave Cushman

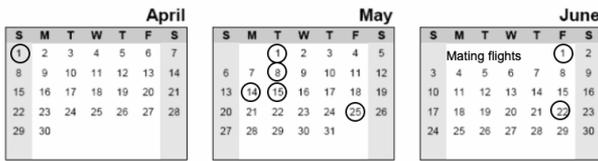
Figure 3.8.10 Queen cells on miller frame

add a protein patty. The nuc's cover should have a 2 to 3 inch circular hole cut into the center. Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the syrup from sunlight.

Step 11: Continue to feed the mating box/nuc for two weeks.

Step 12: Wait 3 weeks before checking the results. You should find a laying queen with a good brood pattern. If this is the case, transfer the bees into a standard box. If you were not successful, return the frames to the original hive.

Because the Miller method involves several steps and critical dates, a calendar is very useful to organize and coordinate your schedule with the queen rearing schedule. An example of a schedule follows.



*Figure 3.8.11
Sample
calendar
pages*

Date	Step Number	Action
4/1	Prep	Start feeding cell builder hive(s)
5/1	Prep	Start feeding drone mother hive(s), place drone frames in drone mother hive(s)
5/8 – day 1	#3	Prepare Miller frame and insert into queen mother hive.
5/14 – day 7	#4	Remove the queen from the cell builder hive
5/15 – day 8	#5	Remove the Miller frame from queen hive, prepare it and place into the cell builder hive.
5/25 – day 18	# 6	Remove queen cells, place into mating boxes/nucs, return original queen to cell builder hive.
6/1	Target Date	Mating flight(s)
6/22	#8	Check results, transfer to standard hive.

Figure 3.8.12 Queen rearing action plan

Hopkins Method

Isaac Hopkins described his method of raising queens in 1911. According to G.W. Hayes, “The Hopkins Method of Queen Rearing is as good as and probably better for us than when first introduced 80 plus years ago.” In the same May 1991 edition of *The American Bee Journal* he noted, “Believe me when I tell you that you can raise more quality queens than you can probably use yourself with virtually no specialized equipment or manipulation.” The usual number of queens raised is about 20 using the Hopkins method.

The Hopkins and Miller methods are similar. The primary difference between them is the orientation of the frame upon which the queen cells are built. With the Hopkins method the frame is horizontal.

Step 1: Decide how many queens/nucs you can produce after evaluating your resources; e.g. amount of brood, workers to care for the brood, queen cells and availability of mating boxes/nucs.

Step 2: Set up the mating boxes/nucs using the original hive

as the source of materials. If the resources of the mother (original) hive do not support the number of nucs you choose to make, you can supplement using brood and workers from other hives.

Nucleus configuration:

- Three (3) brood frames of capped brood with some cells that are emerging
 - If the queen cells are located singly or in doubles on brood frames, simply include the brood frame with the queen cell(s)
 - If the queen cells have been removed from mother hive frames, provide a space in the nucleus frames that are to receive the queen cells by cutting out a small portion of comb. The queen cells can then be placed in the space and fixed in place with a couple of tooth picks.
- one (1) frame of mostly pollen
- one (1) frame of mostly honey
- enough workers to cover the brood and queen cells

Mating box configuration:

- one frame of mostly honey and pollen
- one brood frame with emerging brood
- 2 queen cells
- enough workers to cover the brood and queen cells

Step 3: Day 1: Construct the Hopkins frame and place in queen mother hive.



Photos: Brushy Mt. Catalog

Figure 3.8.13 Closeup of foundation pin for Hopkins Frame

- Build an unwired frame with foundation held in place with foundation pins. This is the Hopkins frame.

Unwired frames need be used as this will make later queen cell removal easier.

- Re-arrange the frames to create a space in the center of the queen mother brood box. This is done by removing a little used frame on the outside edge of the brood box. Brush off the bees and place this frame in another hive.
- Place the Hopkins frame in the space created in the queen mother hive.



Figure 3.8.14 Foundation pin in Hopkins Frame

Step 4: Day 5: Remove queen from the cell builder hive.

- The queen must be removed **one day before** moving the Hopkins frame from the queen mother hive to the cell builder hive. This **queenless condition** creates an emergency response and must exist if queen cells are to be raised. The bees respond to this emergency by quickly building queen cells.
- Store the queen temporarily in a small nuc. She will be returned to the cell builder hive at a later stage.

Step 5: Day 6:

- Evaluate the Hopkins frame and look for the presence of 24-36 hour old larvae.
 - Look at the Hopkins brood frame from the queen mother hive frame. Since day one the bees will have drawn out the foundation and the queen should have started laying eggs in the new comb.
 - You should see drawn comb, eggs and 24-36 hour larvae. If you do not see larvae of this age, replace the frame and wait another day or two

- Look at both sides of the Hopkins frame and select the side containing **the most 24 -36 hour old larvae**.
- Cull surplus cells in the Hopkins frame.



Figure 3.8.15 Hopkins brood frame

- Place the selected side face up on a work surface in an area with good lighting, temperature around 80 F, humidity, and NO direct sunlight as this would kill the larvae.
- Reduce the number of potential queen cells from developing too close together (as shown) by destroying two rows of worker cells and leaving the third intact. This provides space to keep the finished queen cells from being damaged when they are removed from the frame.
- Start at the top of the frame. Use a hive tool and scrape the cells from one side of the comb to the other. Damage the cell clear down to the mid-rib. Within the row of remaining, intact cells, destroy two cells down to the mid-rib and leave every third intact. The red lines on the photo indicate the cells to be destroyed.

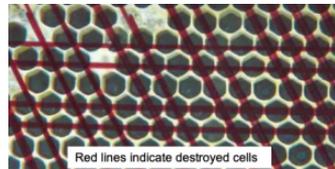


Figure 3.8.16 Destroyed cells

- Place a shim above the brood frames in the now queenless cell builder hive. It acts as support for the prepared Hopkins frame and provides space for the protein patty and for the bees to build queen cells.
- Divide the protein patty into quarters and place them in the inside corners of the shim and above the brood frame top bars.

- Place the prepared brood frame on top of the shim and close the hive with a telescoping cover.
- Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the syrup from sunlight.

Step 6: Nine days after placing the Hopkins frame on top of the cell builder (approximately day 15) prepare and transfer the queen cells to queenless mating boxes/ nucs.

- Place the frame in a standing position with the top bar on top and the bottom bar resting on a secure surface. With a sharp, wet knife carefully cut the comb leaving a half inch border around each queen cell.

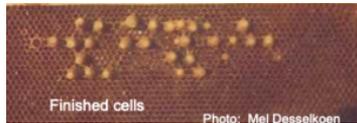


Figure 3.8.17 Finished cells

- Create a cavity the size of the queen cell and border comb in the frame to receive the cell.
- Gently press the border comb with the queen cell into this cavity. Do not press on the fragile queen cell itself. If needed, a tooth pick can be used for additional support. (See Nucleus method)
- Return the original queen to the cell builder hive or place one or two queen cells in the cell builder to become the replacement queen.

Step 7: Feed and reduce entrance. Before closing up the mating box/nuc, add a shim to create some space above the top bars and then add a protein patty. The nuc's cover should have a 2 to 3 inch circular hole cut into the center. Place an inverted mason jar with 1:1 sugar syrup over the hole. The holes

in the Mason jar lid should be 1/16 inch in diameter. Include a feed stimulant, such as Honey Bee Healthy, in the syrup. Cover the feeder with an empty box or bucket to protect the syrup from sunlight.

Step 8: Continue to feed the mating box/nuc for a couple weeks.

Step 9: Wait three weeks to check the results. You should find a laying queen with a good brood pattern. If this is the case, transfer the bees into a standard box. If you were not successful, return the frames to the original hive.

There are a number of ways to raise queens and to do it well. Four methods have been presented. While we beekeepers like to believe we are in control, we can not overlook the queen's influence. Appropriately we will leave it to her to have the last word.

“...If any old farmer can keep and hive me,
Then any old drone may catch and wive me;
I'm sorry for creators who can not pair
On a gorgeous day in the upper air, I'm sorry for cows who
have to boast
Of affairs they've had by parcel post,
I'm sorry for man with his plots and guile,
His test tube manner, his test tube smile;
I'll multiple and I'll increase as I always have- by mere
caprice;
For I am a queen and I am a bee,
I'm devil-may-care and I'm fancy- free,
Love-in-air is the thing for me,
Oh, it's simply rare In the beautiful air,
And I wish to state

That I will always mate with whatever drone I encounter”
“Song of the Queen Bee”

Poems and Sketches of E.B. White reproduced in *Queen Rearing and Bee Breeding* Harry H. Laidlaw Jr. and Robert E.

Page, Jr.

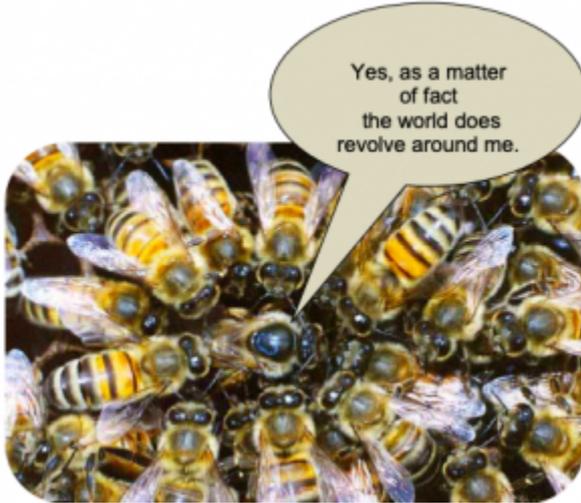


Figure 3.8.18 Honey bees surrounding a queen bee

References:

Harry H. Laidlaw Jr. & Robert E. Page Jr. (First Edition 1997) *Queen Rearing and Bee Breeding*, Wicwas Press

Larry John Connor (2009) *Queen Rearing Essentials*, Wicwas Press

Kim Flottum (2011) *Better Beekeeping*, Quarry Books, pgs 81, 92

Mel Disselkoen (2008) *I.M.N. System of Queen Rearing*, Self published

G. W. Hayes Jr. (May 1991) *The Hopkins Method of Queen Rearing*, American Bee Journal

Roy Hendrickson (April 2011) *Managing Varroa: Selecting for Resistance & Queen Rearing*, American Bee Journal, pg. 349

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Appendix A: Honeycomb Map

Project Management in collaborative teams can often be cumbersome and create patterns or ruts in our collaboration.

Often we take on tasks that are easy or within our role. Often there's a hierarchy of tasks and a "leader" taking on the lion's share of the work. The honeycomb map is designed to help you break up projects into digestible tasks, and share roles, tasks and power amongst collaborators. This tactile tool is meant to help you translate projects from vision to mapping. First, as a team, you will need to make a list of all the tasks necessary to complete the project. Then group those tasks based on the theme of your project. Next write out each of the sets of tasks in sets of 5.

Each project you map with this system should be broken into as many groupings as necessary (5-500). Then the tasks should be delegated amongst team members. Team members can take on tasks that amplify their skills or can choose to take on tasks that challenge their skills. Team members can ask for support or accountability partners based on the tasks they chose. The tasks and roles can then be translated into whatever project management software or hardware your team prefers for project tracking and reporting.

The goal here is to divide tasks towards your shared objective in a way that feels equitable while giving group members a chance to try new roles and responsibilities. While this tool alone won't create equitable power sharing, it is an excellent start to mapping roles and responsibilities while noticing patterns of action or inaction in your team.

The [Honeycomb map](#) is also available as a PDF for download.

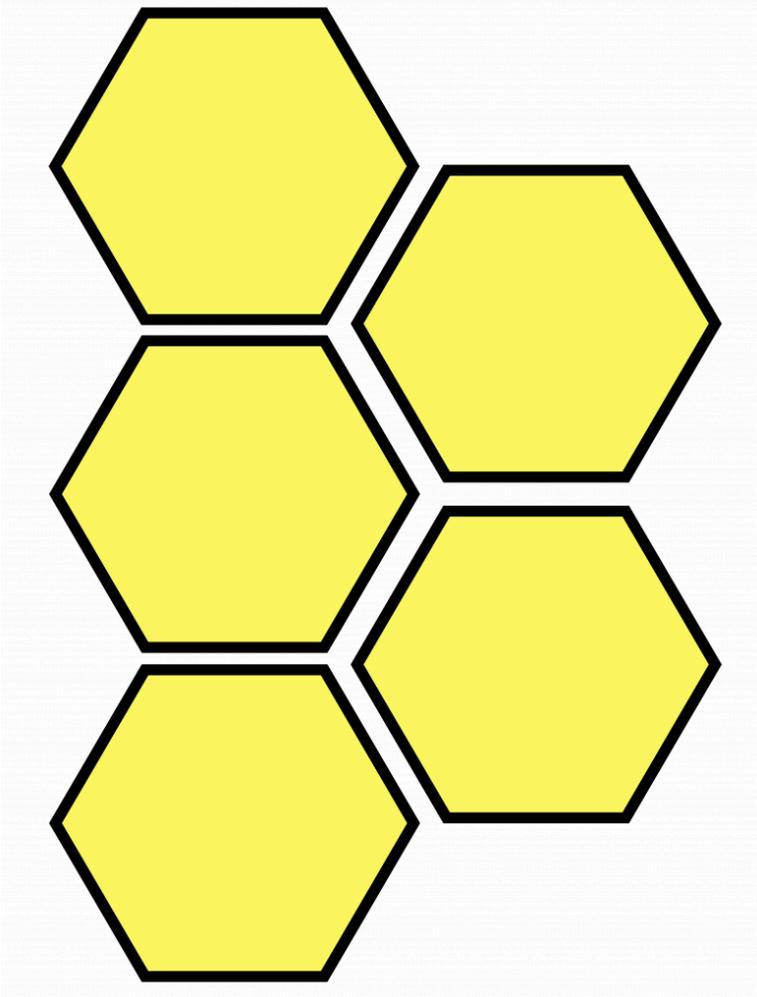


Figure A.1 Honeycomb map

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Appendix B: Historical References

It is important to recognize that it wasn't just white male colonizers that innovated beekeeping in North America. There were many people who worked with bees and generated new innovations in beekeeping that were in alignment with natural cycles of the honey bee hive. For example, Charles Henry Turner's discovery of color and pattern vision in honey bees.

Often the voices of people of color and women are erased from history because they were not in positions of power or did not have networks to get information out to broader networks. Latinx beekeepers have been working with bees since the 1950s, though we don't have documentation of what was happening before then. Many Indigenous communities harvest honey using pre-Hispanic techniques, such as clay pots. African-American and Indigenous populations in the US were honey hunters, farmers and gardeners as Tammy Horn references in her book, [*Bees in America: How the Honey Bee Shaped A Nation*](#).

Below are some resources to learn more on the "forgotten" contributors to beekeeping history.

Beekeeping and African-Americans

[Annotated bibliography on Beekeeping and African Americans](#)

Charles Henry Turner

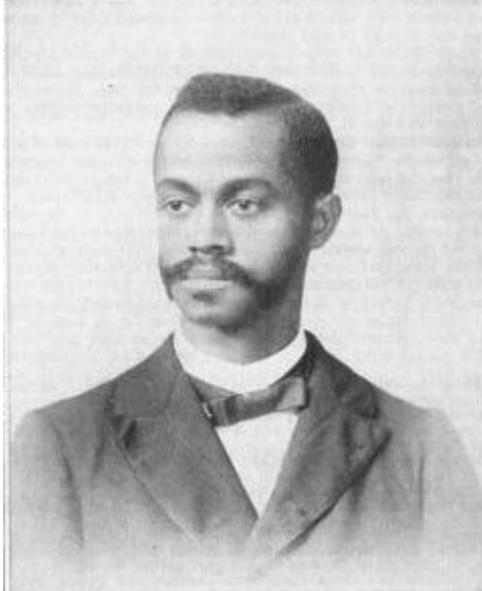


Figure B.1 Charles Henry Turner

[Charles Henry Turner and investigations into color vision and pattern vision in honey bees](#) – follow link to download full text PDF for free ([another online version](#) is available if your institution has a subscription to *Annual Reviews in Entomology*.)

[Short bibliography on Charles Henry Turner](#)

Booker T. Washington, Margaret Murray Washington, and Black Lady Beekeepers of the Tuskegee Institute, Alabama



Figure B.2 Booker T. Washington and his family, Margaret Murray Washington to his right

[A.I. Root tribute to Booker T Washington after his death](#)



Figure B.3
Margaret
Murray
Was
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Bee
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1874



Figure B.4
Margaret
Murray
Was
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on



Figure B.5
Class of girls learning bee-keeping, Gleanning in Bee Culture



Figure B.6
Black women beekeepers

[A.I. Root writing about Margaret Murray Washington and lady beekeepers](#)

[Digitized excerpt of *Bees in America* by Tammy Horn that talks about A.I. Root writing about lady beekeepers and getting some flack for that.](#)

George Washington Carver

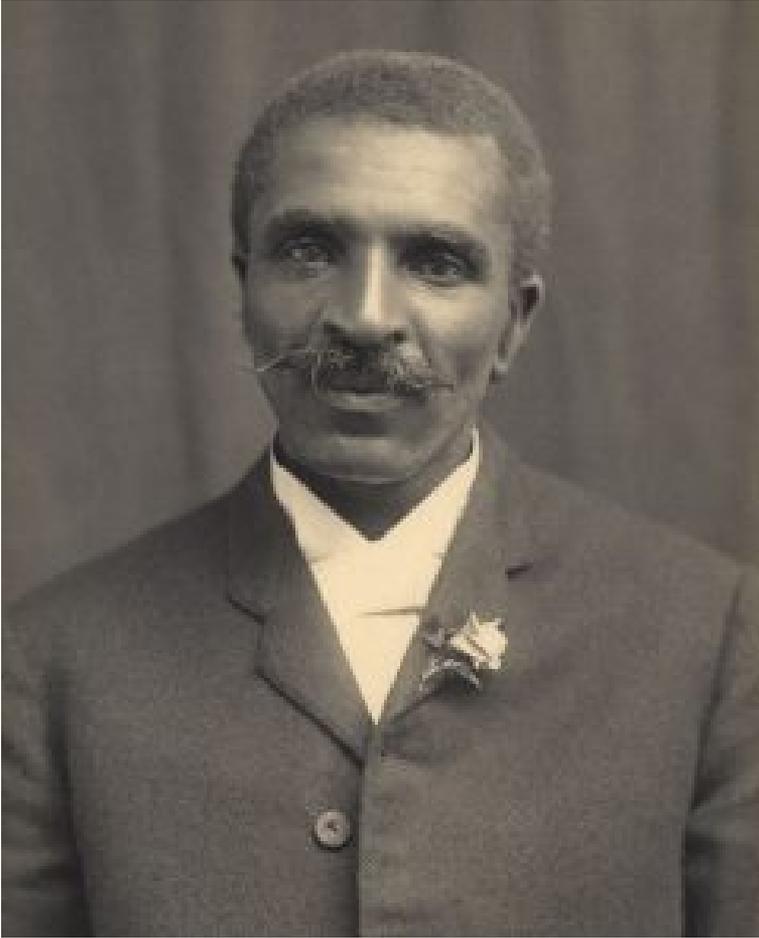


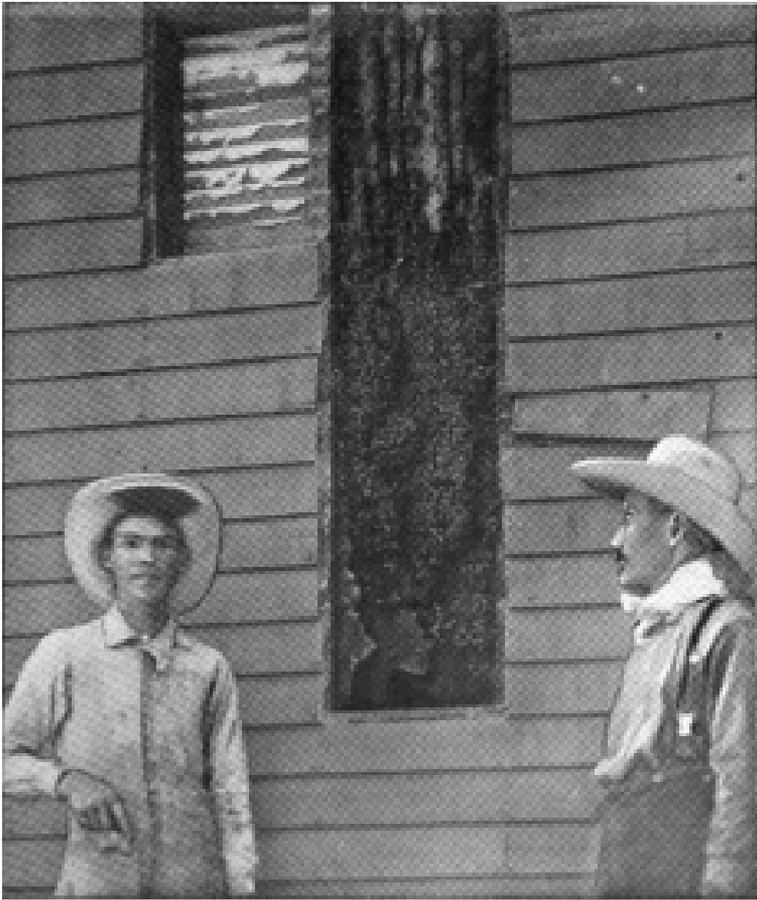
Figure B.7 George Washington Carver circa 1910



Figure B.8 George Washington Carver, probably at Tuskegee

[Excerpt on George Washington Carver and beekeeping](#)

Beekeeping and Asian Americans



CUTTING BEES OUT OF A PIPE OF A BUILDING.

Figure B.9 Leung Chung, Gleanings in Bee Culture, Volume 34, 1906

[From Gleanings in Bee Culture: article on Chinese American beekeeper Leung Chung](#)

[Excerpt from *Bees in America* referencing above article on Leung Chung](#)

Francis Huber and Marie Lullin

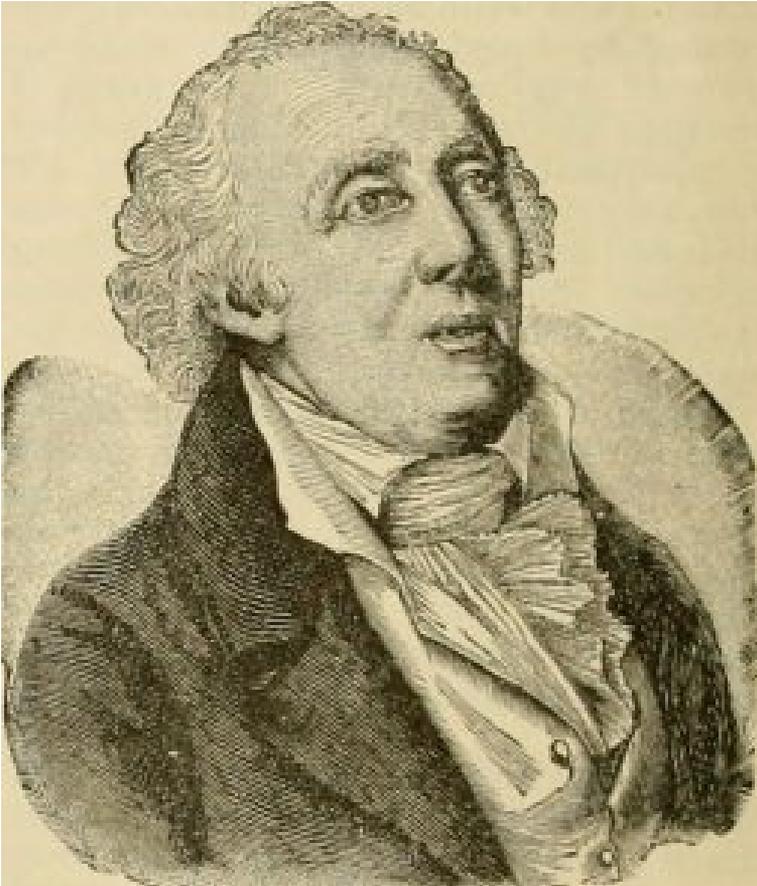


Figure B.10 Francis Huber, American Bee Journal, 1861



Figure B.11 Frontispiece from The Naturalist's Library Volume VI. Bees by William Jardine, 1840

[Excerpt on Francis Huber and illustration of bees, including up-close drawings of anatomy](#), and lots of info on queen bees

[Francis Huber's wife, Marie-Aimee Lullin](#): “Mdlle. Lullin...During the forty years of their married life, her tenderness and devotion toward her husband were unailing. She was his reader, his secretary, his observer; he said of her, in his old age: “As long as she lived I was not sensible of the misfortune of being blind.”

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Glossary of Terms

apiary

A place where bees are kept; a collection of beehives; a yard where bees are kept; otherwise known as a “bee yard.”

beard or bearding

A term referring to a honey bee behavior. Bearding is when bees accumulate at the front of the hive, in a beard-like shape. Bees do this to make room inside the hive for added ventilation on a hot and humid day.

bee brood or brood

In [beekeeping](#), bee brood or brood refers to the [eggs](#), [larvae](#) and [pupae](#) of [honey bees](#). The brood of [Western honey bees](#) develops within a [bee hive](#).

Brood cycle

The “brood cycle” of bee brood is generally considered 3 weeks (21 days). That’s the approximate number of days for a worker bee to develop, from the egg being laid to emerging from their cell. After emerging they are no longer considered brood, but adults, who then go through different phases and duties as they mature.

colonization

The action or process of settling among and establishing control over the Indigenous people of an area.

Colony Collapse Disorder

An abnormal phenomenon that occurs when the majority of [worker bees](#) in a [colony](#) disappear, leaving behind a [queen](#), plenty of food, and a few nurse bees to care for the remaining immature bees. While such disappearances have occurred sporadically throughout the history of [apiculture](#), and have been known by various names (**including disappearing disease, spring dwindle, May disease, autumn collapse, and fall dwindle disease**), the syndrome was renamed colony

collapse disorder in late 2006 in conjunction with a drastic rise in reports of disappearances of [western honey bee](#) (*Apis mellifera*) colonies in North America. Beekeepers in most European countries have observed a similar phenomenon since 1998, especially in Southern and Western Europe; the [Northern Ireland Assembly](#) received reports of a decline greater than 50%. The phenomenon became more global when it affected some Asian and African countries as well.

contraction

A hive contracts, or stops laying eggs and drawing wax, when the nectar flow stops, and the bio region is in a dearth of nectar. Contraction in a hive can also happen in response to pending winter.

cut-outs

Part of the honey bee removal [process](#) of cutting comb.

dearth

In honey bee terminology, a dearth is a shortage of nectar-producing flowers.

Formic acid

Formic acid is a naturally occurring acid. Formic acid is used in beekeeping as a treatment for the Varroa destructor virus, typically applied using strips of acid installed inside of the hive.

fractals

A fractal is a shape made of parts similar to the whole in some way; Fractals are not limited to geometric patterns, but can also describe processes in time.

Glyphosate

A broad-spectrum [systemic herbicide](#) and [crop desiccant](#). It is used to kill [weeds](#), especially annual [broadleaf weeds](#) and grasses that compete with [crops](#).

grafting

Grafting is the most common method of queen rearing and is used worldwide. It involves the transfer of larvae that were intended to be workers into queen cell cups.

Hopkins method

The removal of a frame with eggs or newly hatched larvae from a selected breeder queen. This frame is then given to a queenless cell builder colony. But it is not hung in the normal way; it is placed in a horizontal position above the brood nest.

Industrial Agricultural Complex

A close-knit relationship between agriculture, business and the government; describes how food gets manufactured and delivered from the farm to fork; A set of industries (enterprises) whose activities are directly or indirectly aimed at the production of food or other products produced from agricultural raw materials; A combination of several sectors of the economy aimed at the production and processing of agricultural raw materials and obtaining products from it, brought to the end consumer.

Langstroth hive

A Langstroth hive is any vertically modular [beehive](#) that has the key features of vertically hung frames, a bottom board with entrance for the bees, boxes containing frames for brood and honey (the lowest box for the queen to lay eggs, and boxes above where honey may be stored) and an inner cover and top cap to provide weather protection. In a Langstroth hive, the bees build honeycomb into [frames](#), which can be moved with ease. The frames are designed to prevent bees from attaching [honeycombs](#) where they would either connect adjacent frames, or connect frames to the walls of the hive.

Miller method

Shaped comb or foundation is placed in the middle of a brood box of a selected colony. The queen lays in it and the bees extend the bottom and fill the gaps, allowing the queen to lay in the extensions a few days later. When the eggs start to hatch, it is removed from the colony, the bees removed and the comb is cut back to where the larvae are 24 – 36 hours old, IE 4 – 4 ½ days from the egg being laid. The comb is then placed in a cell raising colony and the bees build Q/Cs on the exposed edge.

microfauna

Small fauna or animals IE insects, microscopic animals.

neonicotinoids

A systemic agricultural insecticide resembling nicotine that are toxic to bees.

Nuc(s) or (nucleus) colonies

A nucleus colony, or nuc, is essentially a smaller hive, sometimes in a smaller box, consisting of bees in all stages of development, as well as food, a laying queen, and enough workers to cover from three to five combs.

nurse bees

Worker bees begin their lives as nurse bees. They spend the first week after they emerge from their cells caring for and cleaning up after the queen, feeding the larvae and making honey.

Oxalic acid

An organic compound that occurs naturally in many foods used by beekeepers as a [miticide](#) against the parasitic [varroa mite](#).

overwinter

(Of an insect, plant, etc.) live through the winter.

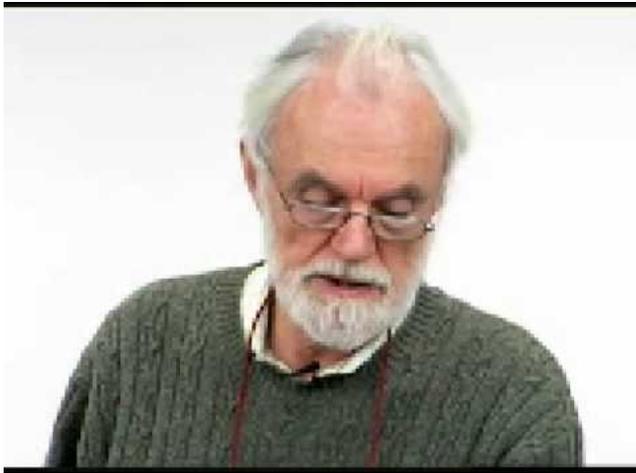
patriarchy

A [social system](#) in which [men](#) hold primary power and predominate in roles of political leadership, [moral authority](#), [social privilege](#) and control of property. Some patriarchal societies are also [patrilineal](#), meaning that property and title are inherited by the male lineage.

Patriarchy is associated with a set of ideas, a patriarchal [ideology](#) that acts to explain and justify this dominance and attributes it to inherent natural differences between men and women.

primitive accumulation

The process by which pre-capitalist modes of production, such as feudalism and chattel slavery, are transformed into the capitalist mode of production.



A YouTube element has been excluded from this version of the text. You can view it online here:

<http://openbooks.library.umass.edu/radicalizethehive/?p=357>

settler culture

Settler colonialism is a form of [colonialism](#) which seeks to replace the original population of the colonized territory with a new society of settlers. As with all forms of colonialism, it is based on exogenous domination, typically organized or supported by an [imperial authority](#). Settler colonialism is enacted by a variety of means ranging from violent [depopulation](#) of the previous inhabitants, to more subtle, legal means such as [assimilation](#) or recognition of indigenous identity within a colonial framework.

small-scale beekeeping

A practice of reclaiming beekeeping as a practice that supports honey bees, rather than uses them as a tool in pollination. Beekeepers are reclaiming the “means of

production” by raising bees who can survive in their bio-regions, sharing honey bees with their community and rescuing and relocating wild hives through live bee removal services.

smoker

A bee smoker (usually called simply a smoker) is a device used in beekeeping to calm honey bees. It is designed to generate smoke from the smouldering of various fuels.

survivor stock

The survivor stock is comprised of bees that successfully overwintered in the presence of Varroa mites with no chemical treatments. If the offspring of these bees is also able to survive in the presence of mites, breeders will be on their way to producing a Varroa-resistant strain. Survivor stock are bred for the genetic trait “longevity.”

swarm

Swarming is a [honey bee](#) colony's natural means of [reproduction](#). In the process of swarming, a single colony splits into two or more distinct colonies.

Swarming is mainly a spring phenomenon, usually within a two- or three-week period depending on the locale, but occasional swarms can happen throughout the producing season. Secondary *afterswarms*, or *cast swarms* may happen. Cast swarms are usually smaller and are accompanied by a virgin queen. Sometimes a [beehive](#) will swarm in succession until it is almost totally depleted of workers.



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<http://openbooks.library.umass.edu/radicalizethehive/?p=357>

symbiotic

Involving interaction between two different organisms living in close physical association; denoting a mutually beneficial relationship between different people or groups.

transmute

Change in form, nature, or substance.

treatment

The application of any acid, chemical or pesticide to the inside of a honey bee colony to manage for disease control.

Varroa destructor / varroa mite

Varroa destructor (*Varroa mite*) is an external parasitic *mite* that attacks and feeds on the honey bees *Apis cerana* and *Apis mellifera*. The disease caused by the *mites* is called varroosis. The *Varroa mite* can only reproduce in a honey bee colony.

Warre hive

A Warre hive is a vertical top bar hive that uses bars instead of frames, usually with a wooden wedge or guide on the bars from which the bees build their own comb, just like they do in nature.

white supremacy

The belief that white people are superior to those of all other races, especially the black race, and should therefore dominate society. In the United States, white supremacy is reinforced by systemic, cultural and institutional norms, and this is referred to as “white supremacy culture.” For more information on white supremacy culture, go check out these great resources at [Showing Up for Racial Justice](#).

