Bee Health Is Not Just About Numbers of Hives

USDA- NASS released its annual report of honey bee losses last week (https://www.usda.gov/nass/PUBS/TODAYRPT/hcny0817.pdf). These annual bee health and honey surveys by NASS are a snapshot in time. These surveys can be confusing for the non-beekeeper. However, it shows what any beekeeper would expect to find. Varroa counts increase in the Spring as the queen begins to lay eggs again (varroa mites breed in the drone cells of hives), and beekeepers purchase packages of bees from the south. Those packaged bees are not often treated for varroa when shipped north and east, so the bees come already infected with varroa mites. “Renovated hives” (requeened or new packages of bees installed into an old and now empty bee hive) always happens in the spring, so of course the numbers will be high then. And, as such, renovated hives are never done late in the season after October, so of course those numbers would be down. This survey shows the schedule of spring hive build up and fall hive slow down, but it does not mean that bee health is improving. Bee health is just not that simple.

The degree of hive management skill and experience of beekeepers today makes it possible for a beekeeper to begin the season with 100 hives, making splits creating an additional 36 hives, but ending the season with only 36 hives; suffering a 65% overall loss having lost a total of 100 hives. For example, a beekeeper may begin the crop pollination season with 100 bee hives:

- 100 hives pollinate almonds
- -8 hives lost to pesticide exposure from neighboring field to almond orchard
- -2 hives lost to Varroa
- 90 hives travel to apples
- -6 hives lost to weather and pesticide exposure
- 84 hives remaining
- +16 splits are made from among the 84 hives
- 100 hives travel to cranberries
- -30 hives lost due to fungicide applications on the crop
- 70 hives travel to pasture land for four weeks
- + 20 splits made from among the 70 hives
- 90 hives travel to pollinate row crops in the south staying for the balance of the summer
- -54 hives lost while pollinating row crops
- 36 hives remain to go into winter
The combinations of reduced bee pasture, the lethal and sublethal mix of agricultural, garden, and lawn chemicals, the effects of Varroa, and bee diseases tax the beekeeper’s skill and experience. This is the real-world of beekeeping, of crop pollination. The total number of hives do not show the whole picture. Improving honey bee health cannot be quantified by the total number of hives. Bee health is impacted by the lack of pesticide-free forage and water, by immune systems weakened from exposure to sublethal levels of pesticides, which allow the diseases from the varroa mite, and other bee pests to overwhelm a bee colony. Comparing 2015 (http://usda.mannlib.cornell.edu/usda/nass/BeeColonies//2010s/2016/BeeColonies-05-12-2016.pdf) and 2016 total honey bee colony numbers from USDA-NASS shows:

<table>
<thead>
<tr>
<th>Month</th>
<th>Five or more colonies -2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 1</td>
<td>2.62 M (down from 2015)</td>
<td>2.82 M</td>
</tr>
<tr>
<td>April 1</td>
<td>2.80 M (down from 2015)</td>
<td>2.85 M</td>
</tr>
<tr>
<td>July 1</td>
<td>3.18 M (increased in 2016)</td>
<td>3.13 M</td>
</tr>
<tr>
<td>Oct. 1</td>
<td>3.03 M (increased in 2016)</td>
<td>2.87 M</td>
</tr>
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Yet, of those 3.03M colonies that went into winter in October of 2016, total colonies reported by January 1, 2017 decreased to 2.62M colonies.

The media needs to stop buying into the “mysterious malady” premise. There is no “mystery” of the factors impacting honey bee health: pesticides, pests, pathogens, and poor forage. To continue the fallacy of a single malady is a misleading and false. It does not explain what we know is happening to bee colonies, and it places all of the blame on one bee pest. Research has examined the sublethal effects of pesticides accumulating in the environment, and within bee hives. As bees are samplers of the environment, they collect in their food (pollen and floral nectar) sublethal levels of pesticides. This sublethal level of pesticide exposure across the growing season is causing bees to die off faster than a queen bee can lay eggs to replace the early dying bees. Additionally, there can be a “blip” in bee losses due to a reduction in pyrethroid sprays in soybeans. Beekeepers tell us, last year less pyrethroids were sprayed onto soybeans, where bees like to forage, so less bee hives died from this labelled bee toxic pesticide. Pyrethroids can be applied to protect a crop and can protect pollinators by making night-time applications of the pesticide, and not tank mixing it with other pesticides that might increase the residual toxicity beyond eight hours. When examining bee health one cannot simply assess the total honey production or the total number of hives with or without mites, but every single factor, and the cumulative effects of all of the factors. Good science, that seeks correct answers in order to provide solutions, understands that all factors must be examined. The media, scientists, regulators, and NASS analysts need to expand their assessments to the collection of real-world data. Bee health is not a singular assessment—as samplers of the environment, honey bees are telling us the accumulation of pesticides make the immune system weaker, reduces the reproductive ability of the queen and drone bees, can make bees forgetful, accelerates the hive tasks of worker bees, and affects the next generation of bees. It is disingenuous for others to continue to say “more research is needed,” or “the research is inconclusive,” about the impact of pesticides upon honey bees, when so many of the chemicals are registered, and sold with federal pesticide labels clearly stating “this product is toxic to honey bees.” (For example see this pesticide label http://www.syngenta-us.com/currentlabel.aspx?productid=721)

While assessing the health of bees from the four factors impacting their health: pesticide exposure, bee pests and diseases, and loss of forage is difficult for scientists, that is no reason to discount the experience and knowledge of what beekeepers see in their hives. While it is difficult to conduct scientific analysis when examining multiple factors, that is the real-world of our honey bees—multiple
factors. We cannot continue to do research simply on one pest of the bee thinking that is the only problem. We cannot continue to ignore the other impacts upon bee health that allow the varroa mite to have such an impact. The additional factor in the US is the intense use of pesticides in industrial agriculture, and in our cities that contribute significantly to the weakened health of honey bees exacerbating the impact of the varroa mite.

Counting a few extra hives, does not mean the problem is solved, or even heading in the right direction. The sublethal accumulation of pesticides in the hive, the pollen and nectar bees collect that has been sprayed with pesticides, eating this sublethal pesticide tainted food across the growing season affects the queen and drones reproductive ability, it affects the next generation of bees, the brood, and it slowly causes the hive to dwindle in population. The bees have shorter lifespans, and the queen cannot lay enough eggs to replace the bees dying earlier than they should, and the hives simply disappear as all of the bees die too soon. They leave behind a full box of honey, but the organism called the bee hive has died. This continues to occur to beekeepers. Our honey bees have health issues: much of it due to us. Monocrops do not provide diverse pollen and nectar for bees. Exposure to pesticides in the pollen, nectar, and water impacts bees. Forage that is contaminated by pesticide drift through the air, soil, and water further impacts basic bee nutrition which would strengthen the bees’ immune system in order to fight-off bee diseases. Humans can change how they manage the land, how they apply pesticides, and how their actions affect the very insect pollinating their crop or their neighbor’s crop.

See us at

**Miami Valley Beekeepers, OH**
Sept. 11, 2017

**Quad Cities Pollinator Conf., Iowa**
Sept. 13-14, 2017

**Denver Bee, CO**
Sept. 19, 2017

**No. Colorado Beekeepers Assn.**
Sept. 21, 2017

**Four Corners Beekeepers Assn., CO**
Sept. 22, 2017

**Nashville Area Beekeepers Assn.**
Oct. 8, 2017

**Tennessee Beekeepers Assn. Conf.**
Oct. 20-21, 2017

**Ohio State Beekeepers Assn. Conf.**
Nov. 4, 2017

**Pennsylvania State Beekeepers Assn**
Nov. 10-11, 2017

**Empire State Honey Producers Assn. Conf. (Niagara Falls, ON)**
Nov. 17-18, 2017
Blame-the-mites-and-backyard-beekeepers-a-thon

Non-beekeepers need to learn the life cycle of a bee hive before they “advise” beekeepers on hive management. Applying chemical treatments when honey supers are still on the hives is in violation of the label of most mite treatments (see HBHC mite treatment guide http://honeybeehealthcoalition.org/Varroa/). A State beekeeping association leader expressed skepticism of this latest “Blame-the-mites-and-backyard-beekeepers-a-thon” as it does not clarify who is collecting the data, where the data will be housed, who is doing follow-up for year to year comparisons. The beekeepers this is directed at, backyard beekeepers, believe this survey will also be as slanted as other voluntary surveys where participants are concentrated in just a few states, thereby not being a statistically representative survey of beekeeping, or beekeeping in each state, or the US overall. As the recent USDA survey showed, USDA does not understand the hive cycle, showing mites were high in April-June when the hive itself is increasing its population, drone eggs are being laid by the queen (varroa prefer to lay their eggs in drone cells), and when new packages of bees with varroa hitching a ride are shipped to beekeepers to replace winter losses. By continuing to focus only on varroa mites, we continue to ignore the impact of forage loss, forage contaminated by pesticide drift and pesticide translocation through the soil, and honey bees directly exposed to bee toxic pesticides and tank mixes of pesticides.

Overlooked information in varroa infestation is late summer pesticide exposure. An exposure of a highly toxic pesticide not only can severely reduce a hives’ population, many of these pesticides cause mite populations to explode. This will cause the mite per 100 bees threshold to immediately “go out of whack” making it appear as though varroa mite is the cause of the hive’s demise, when in fact it is “varroa because, not because of varroa.”

Bee health will not be improved by ignoring the other factors impacting pollinators. Education and behavior change concerning pests, pesticides, poor forage, and pathogens must be addressed together. The honey bees’ immune system will not be able to fight the viruses spread by varroa if the bees’ food is contaminated by pesticides, and if bees do not have diverse and natural nutritional forage. The Honey Bee Health Coalition working with the manufacturers of the myriad of varroa treatment products has done a good job of compiling very specific varroa control information. It is available to beekeepers, beekeepers are using it in new beekeeper classes. The education of new beekeepers is being accomplished at the regional, state, and local level in regional, state, and local beekeeping organizations. It is becoming insulting to the regional, state, and local beekeepers that non-beekeepers and “outsiders” are now harping on one pest of honey bees and one aspect of beekeeping management. Not

“The flip side of knowledge is ignorance” (Harding, 2000; Gross 2010): when we shine the light in one place, there is darkness in another.”

pg. 51

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enough beekeepers are included in designing research projects about honey bees, or in planning events such as this latest survey. To resolve the honey bee health crisis we need to examine all of the factors affecting honey bees and native pollinators including forage loss, pesticide contaminated forage and water, and pesticide exposure, and most importantly include beekeepers in the project development, research, analysis, and reporting.

1 Effects of Imidacloprid and Varroa destructor on survival and health of European honey bees, Apis mellifera. https://www.ncbi.nlm.nih.gov/pubmed/26990560


Recent News

Fipronil Contaminates Eggs in EU
Eggs containing fipronil found in 15 EU countries and Hong Kong
The Latest: Report: Egg scandal suspect denies involvement
Fipronil Fact Sheet http://npic.orst.edu/factsheets/fipronil.html

The Poison Papers Project http://www.theorganicview.com/environment/poison-papers-project/

Listen to a fascinating and insightful interview with Dr. Jonathan Latham, Co-Founder and Executive Director of the Bioscience Research Project. The Bioscience Research Project, along with the Center For Media and Democracy, have digitized 40 years of records into “The Poison Papers,” accumulated by Carol Van Strum in her battle over chemicals, mostly herbicides. June Stoyer at the Organic View Radio Show is one of the first to promote this research project.

Are They Thriving or Dying? -- Discussion With USDA About Honey Bee Health Survey
Eastern Apiculture Society Conference, Newark, DE

Part of the 50 years of service celebration to EAS by Dr. Dewey Caron.

Frank Lindsey, New Zealand beekeeper visited our table.

The EAS t-shirt.

PLAN NOW for EAS 2018
We are a member of the Honey Bee Health Coalition


HBHC Varroa videos:
- Varroa mite PSA - [https://www.youtube.com/watch?v=p4titRjZuOQ](https://www.youtube.com/watch?v=p4titRjZuOQ)
- Video 1 - IPM - [https://youtu.be/aFILPZ5KbgU](https://youtu.be/aFILPZ5KbgU)
- Video 2,3 - Sampling methods - [https://youtu.be/IgPfT9FQxLc](https://youtu.be/IgPfT9FQxLc)
- Video 4 - Essential oils - [https://youtu.be/fsn0RurGz10](https://youtu.be/fsn0RurGz10)
- Video 5 - Using Apivar - [https://youtu.be/pCq_Pu1FeO](https://youtu.be/pCq_Pu1FeO)
- Video 6 - Using Apistan or Checkmite+ - [https://www.youtube.com/watch?v=nsbY1nuUReY](https://www.youtube.com/watch?v=nsbY1nuUReY)
- Video 7 - Formic acid - [https://www.youtube.com/watch?v=6PK5BTjexSs](https://www.youtube.com/watch?v=6PK5BTjexSs)
- Video 8 - Using HopGuard - [https://www.youtube.com/watch?v=rOlafuIBBf0&t=8s](https://www.youtube.com/watch?v=rOlafuIBBf0&t=8s)
- Video 9 - Using Oxalic Acid - [https://www.youtube.com/watch?v=Sp-9eD3Sgw](https://www.youtube.com/watch?v=Sp-9eD3Sgw)
- Video 10 - Using sanitation, screen bottoms - [https://www.youtube.com/watch?v=U7Axy5JVDc](https://www.youtube.com/watch?v=U7Axy5JVDc)
- Video 11 - Using drone brood removal - [https://www.youtube.com/watch?v=j17ASzxxEgs](https://www.youtube.com/watch?v=j17ASzxxEgs)
- Video 12 - Using requeening - [https://www.youtube.com/watch?v=GnPBIStvC60](https://www.youtube.com/watch?v=GnPBIStvC60)

Quick Guide to Reporting A Bee Kill  [http://pollinatorstewardship.org/?page_id=3292](http://pollinatorstewardship.org/?page_id=3292)

The Bee Understanding Project- View the first film at this link  [https://vimeo.com/149238870](https://vimeo.com/149238870)
Seeds for spring flowers for honey bees!

Pollinator Stewardship Council has partnered with Ohio Prairie Nursery in support of pollinator habitat. *You can get native seeds for eastern U.S. planting zones here.* Select “Support our Cause” (http://www.ohioprairienursery.com/?ref=pollsteco) to view featured seed selections to benefit pollinators. *A portion of sales generated from our website will help support our work.*

Seeds for honey bees WEST of the Mississippi

To increase plant biodiversity, improve gardens yields, and make a positive difference for the future, plant for pollinators WEST of the Mississippi with bbbseed. [https://www.bbbseed.com/articles/plant-for-pollinators-project/](https://www.bbbseed.com/articles/plant-for-pollinators-project/)

Betterbee Has Seeds for Pollinator Habitat

Betterbee was at the Massachusetts Beekeepers Assn. Spring Meeting offering a variety of seed mixes for beekeepers to plant. *You can find seven seed mix varieties at their website* [www.betterbee.com](http://www.betterbee.com)

Pollinator Stewardship Council
1624 Idlewood Ave., Akron, OH 44313
832-727-9492  www.pollinatorstewardship.org

We are also on [Facebook](http://www.facebook.com)

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For financial information about this nonprofit see our Annual IRS 990 filing on our website (Home page/About Us/ Annual Report) [http://pollinatorstewardship.org/?page_id=883](http://pollinatorstewardship.org/?page_id=883)
We are member supported! The Pollinator Stewardship Council is a nonprofit organization; donations are tax deductible.

- Butterfly Pavilion: [https://www.butterflies.org/](https://www.butterflies.org/)
- Seib’s Hoosier Honey: [http://www.seibshoosierhoney.com/](http://www.seibshoosierhoney.com/)
- Strachan Apiaries: [https://www.strachanbees.com/](https://www.strachanbees.com/)
- Sunshine Apiary, Inc.: [https://www.facebook.com/sunshineapiary](https://www.facebook.com/sunshineapiary)
- Smith Farm Pure Honey: [www.smithfamhpurehoney.com/](http://www.smithfamhpurehoney.com/)
- Beekeepers of Middle Tennessee: [http://boimtn.org/](http://boimtn.org/)
- Randy Oliver: [http://scientificbeekeeping.com/](http://scientificbeekeeping.com/)
Old Mill Honey Co.  
Foothill Honey Farm  
Wind River Honey Co.  
Miks Honey Farms

California-Minnesota  
Honey Farms  
Rick Smith  
Bob McDonell  
Samuel Hall

Headwaters Farm  
Hiatt Honey, LLC  
South Dakota Beekeepers Assn.  
Bret Adee

Indian Run Apiary  
California Apiaries, LLC  
Harmony Honey Co.

Red-Headed Honey  
Sunrise Feed & Supply  
Kentucky State Beekeepers Association

Geauga County Beekeepers  
http://www.geaugacountybeekeepers.org/

Nature’s Own Designs Apiary Products  
http://nodglobal.com/

Essex County Beekeepers’ Assn.  
http://www.essexcountybeekeepers.org/index.shtml

Los Angeles County Beekeepers Assn.  
http://www.laabeek.org/

Pennsylvania State Beekeepers Assn.  
http://www.pastatebeekapers.org/

The Studio Digital  
http://www.thestudiodigital.com/

Beekeeping Insurace Services  
http://www.beekeepingins.com/

Crop Pollination Association of Australia  

Cox Honeyland of Utah  
http://coxhoney.com/

Michigan Commercial Beekeepers Assn.
Beekeepers Working for Beekeepers

The Board and Program Director are all beekeepers. We work to:

- Raise awareness about the adverse impact of pesticides on pollinators critical to the supply of food and the ecosystem.
- Provide advocacy, guidance, and tools to document the detrimental effect of pesticides on pollinators.
- Affect regulatory processes of pesticide risk assessment, label, and enforcement.