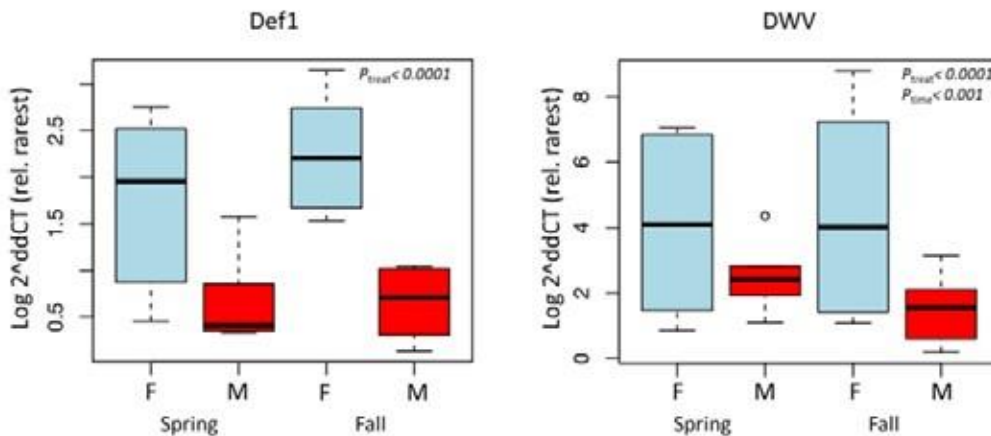


# Tracking Feral Bee Health in Pennsylvania

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What a better way to start 2018 than with an update about our exciting and ongoing citizen science project, **Tracking Health of Feral Bees** (<http://lopezuribelab.com/tracking-feral-bee-health/>) in PA. It was a busy 2017. We sampled 19 feral colonies coupled with 11 managed colonies throughout Pennsylvania. Once winter arrived, the field season wound down, and the bees had gone into hibernation mode, we were able to begin laboratory analyses. This involved comparing the immune systems and viral levels of the feral and managed colonies. We are very excited to share with you preliminary results from our first year of sampling. So far, the data from the laboratory analyses suggest that feral colonies have 2 fold higher amounts of deformed wing virus (DWV) than managed colonies. This may seem like bad news. However, our results also suggest that the feral colonies are producing immune genes at a much higher proportion in feral than managed colonies. For example, Def1 (Defensin-1) is an immune system gene commonly studied in social insects and often used as a proxy for general immune function. What does this mean? While we are still working on collecting more data and starting follow-up experiments, these preliminary results suggest that feral colonies in PA are harboring higher levels of DWV and these colonies are defending themselves naturally through their immune systems (*figure 1*). This indicates some of these feral colonies may be evolving better tolerance to viruses and other pathogens. As we enter our second year of this project, we hope to continue mapping the distribution of feral bee colonies throughout PA and to characterize their levels of disease pressure and immune gene expression.

We would like to give a big thank you to everyone who has contributed to this project, especially those who submitted information about the location of feral colonies. We are planning to sample 16 additional feral colonies this coming spring, so we still need your help! If you know of a feral colony location please contact us or fill out our **Feral FORM** (<http://lopezuribelab.com/tracking-feral-bee-health/>) on our webpage.



**Figure 1: Immune responses in feral and managed honey bee colonies in Pennsylvania for the immune gene Def1 and DWV.**

A feral colony in an abandoned house near Clarion county, PA and another feral colony in a tree outside of Rectar, PA



## *Lopez-Uribe Lab update*

In addition to the feral bee project, we are working on two other projects that will have regional impacts for the pollinators in Pennsylvania:

**What's buzzing in your backyard?** Our lab is also working on developing an updated checklist of bees that are found in Pennsylvania. Ph.D. student Shelby Kilpatrick is collecting information from multiple databases and insect collections to generate an updated list of all the bee species present in the state. Please check out our **Checklist of Bees of Pennsylvania** (<http://lopezuribelab.com/checklist-bees-pennsylvania/>) to find out more details about which bees may be the ones buzzing in your backyard.

**Project COMB (Conventional and Organic Management of Bees):** This USDA funded project aims to compare three different management strategies commonly used by beekeepers. We will be running a two-year experiment with ALMOST 300 colonies to do a side-by-side comparison of how conventional, IPM, and a chemical-free beekeeping approaches impact colony health and beekeeping economics. Please check out our webpage for more info, **Project COMB** ([www.lopezuribelab.com/comb/](http://www.lopezuribelab.com/comb/)).

Find out how we are prepping for the 2018 apiary field season with **hive irradiation** (<http://lopezuribelab.com/2018/02/14/gamma-irradiation-beekeepers/>). Please stay up to date via social media on Twitter or Facebook ([@lopezuribelab](https://twitter.com/lopezuribelab)).