

Ohio Bumble Bee Queen Survey, April – June 2018

Thank you for volunteering to be part of the 2018 Ohio Bumble Bee queen survey! By submitting data on when and where bumble bee queens are nest-hunting and on what plants they are feeding, you are giving us important information on the status of bumble bees in Ohio and how to protect them. Healthy bumble bee populations start with queens. Bumble bee nests are annual, starting again each year from a new queen. In late March or April, queens emerge from their winter burrows underground and begin searching for nest sites, and then later collect pollen and nectar to feed their new brood. About a month after a queen finds a new nest, her first group of workers will emerge (in mid- to late May). In June – July, if the colony is doing well, the queen will produce males and new queens in mid and late summer to carry on her genetic line. Those new queens will mate, then overwinter in abandoned rodent burrows, under logs, or in leaf litter to start a nest the following spring.

Spring queens that are actively searching for a nest site will fly low and slowly over the ground in a back and forth sweeping pattern, stopping occasionally to disappear down a hole/ crevice to invest a potential site. Here's an example of what that looks like: <https://www.youtube.com/watch?v=pKv1IOVVIu4>

This queen survey is being done in conjunction with a larger statewide Ohio bumble bee survey. The goals are to:

- (1) Determine if an endangered bumble bee species (*Bombus affinis*, the rusty-patched bumble bee) and another of conservation concern (*B. terricola*, the yellow banded bumble bee) still occurs in Ohio, and if so, where.
- (2) Document the status of other common bumble bee species in the state
- (3) Add to our understanding of the factors that can cause bumble bee declines, like lack of flower resources and land use change.

Researchers & Contact Information

- **Jessie Lanterman**, PhD, post-doctoral researcher at OSU, Goodell Lab, (Lanterman.2@osu.edu). **Submit data + photos to me at: osubeereseach@gmail.com**
- **Dr. Karen Goodell**, Associate Professor, OSU, Department of Evolution, Ecology, & Organismal Biology (Goodell.18@osu.edu)
- **Dr. Randy Mitchell**, Professor of Biology, U of Akron (RJM2@uakron.edu)

In this document:

- Protocol for doing a timed 15-minute observation of *foraging* queen bumble bee queens that are feeding on flowers, data sheets, and instructions for reporting the data (p. 2-5)
- Protocol for reporting your observations of *nest-hunting* queen bumble bees (p. 6-7) and data sheet

- Resources on bee identification, and how to tell a queen from a worker (p. 8)
- List of plants commonly visited by bumble bees (p. 9-10)

Protocol for doing a timed 15-min foraging bee survey and reporting the data to us:

When:

- On warm sunny days (>65°F) with little wind (< 10 mph)
- Between the hours of 8:00 am and 6:00pm. Since bees are not warm-blooded like mammals, you have the best chance of spotting queens in spring after it has already warmed up for the day, and before it starts to cool down again in the evening.
- For **15 minutes** at a time, when you are not doing other tasks simultaneously. For example, do grab your lawn chair and watch those flowers, but don't say you are doing a timed observation and half-heartedly watch for bees while you hang laundry or weed the flower beds.
- You can submit as many 15-min observations to us as you'd like between April – June

Where & Which Flowers:

- Wherever there are abundant flowers blooming at or below eye-level (may be shrubs or herbaceous plants) – where you can easily observe bees on them
- On a patch of flowers (between 2m² – 10m² area) or a shrub / *small* tree that is in *full bloom*
- In your yard, or a local park, nature center, or other public place with abundant flowers that are attractive to bees
- Once you find a good spot, stay at that patch for the entire 15 min observation period
- Flowers can be wild or planted, but if planted be sure they are not ornamental cultivars that do not produce nectar or pollen. Some ornamentals, like azaleas, rhododendrons, lilies, and hostas are very attractive to bees. However, some garden flowers have been bred just for showiness and lost their ability to make pollen/nectar for bees.
- See our list below of flower species that are frequently-visited by bumble bees. Use your best judgement on flowers, and contact the researchers if you have questions about where and on which flowers to observe.

How to report data:

- Each time you complete a timed 15-minute observation (whether you see bumble bees or not), fill out the data sheet using **Google Forms** at (click, or copy paste this link into the address bar of your browser):
<https://goo.gl/forms/wB9N0CS7VDtmwwiM2>
 - OR...if you are having trouble with google forms, you can fill out the data sheet on the next page in Word and send it back by email to Jessie at: OSUBeeResearch@gmail.com

- If you have any photos of bumble bees on flowers that you observed that day *during your timed observation*, we would appreciate it if you send use those at OSUBeeResearch@gmail.com.

Grab a pen and a notebook. Here is the specific information you need to record during each 15-min observation:

- Date, Start/End Time, Temperature (can estimate from watching the morning news, newspaper, online...), Weather (sunny or cloudiness)
- Location (street address and/or GPS coordinates)
- Habitat type (forest, woodland, edge or transitional zone, wetland, grassland/meadow, maintained yard or flower bed)
- Total area / size of the patch of flowers you observed __ ft by __ ft
- Total number of queen bumble bees you saw
- The names of the types of flowers you watched for bees, and approximately how many flowers were in that patch
- The number and type (species) of bumble bees you observed on each type of flower (see data sheets below)

Tips for seeing the most bees

- You will catch more bees on patches of flowers in the sun than in the shade
- Stand at least three feet away from the flower patch you are observing, and position yourself so that you don't cast a shadow over the flower.