

# Protocol for Dead Bee Trap Monitoring

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Thank you again for your interest in participating in this project. Your participation and data will facilitate the development of a management tool that can proactively monitor for hive health issues such as pesticide exposure, varroa, and other diseases.

## Designing Trap

We encourage beekeepers to utilize multiple traps within an apiary to better assess impacts on individual colonies and apiaries. This will also provide us with more information for each location.

## Materials:

### Each trap will require:

4 - 3' 2X4 treated boards (we recommend a 2x4x12 board)

1 - 3'2"X3'2" section cut from white or light colored UV-resistant or outdoor material (such as tarp)

8 - 3" screws

Staple Gun

### Steps

1. Cut your board into 3 foot sections.



- Align these boards according to the picture below



- Using 2 - 3" screws, screw the board together as pictured below.



- Repeat until you have a square. Paint or stain the wood to protect it from weather conditions.



- Then, cut your fabric to 3 foot by 3 foot and lay on the inside of the square.

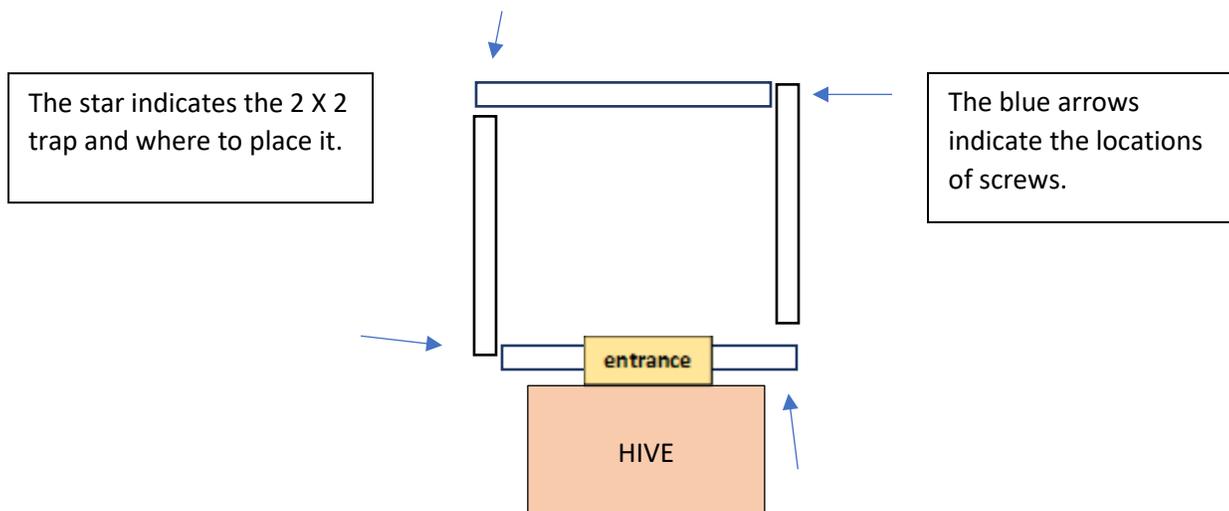


6. Staple the edges of the fabric to the inside of the boards.



7. Your 3 X 3 trap is complete.

Picture 5: this is how the trap should be place in front of the hive.



## When/What to record

If you have multiple traps, the traps should be assigned a unique identifier (number, code, or name) so data may be correlated to specific hives. Using the provided template for recording data, we ask that each trap is checked weekly. We prefer that the trap is checked on the same day each week or as close to the same day as possible to keep the data consistent!

To record data collect all bees within both traps (you will need to store them) Record the number in each trap for that week. The traps will all have unique numbers to help organize the data. If you feel comfortable we would like the age of the bees indicated as well. This would be indicating if they are old bees with tattered wings and no fuzz, or young bees with lots of hairs all over the body. It is also important to mark if you notice pupae or anything abnormal (distinct increase in dead bees present, lots of young nurse bees, queen, etc). If you are interested in learning how to identify the bee age or anything listed above, email with questions.

Each Trap should have its own data sheet to make monitoring easier.

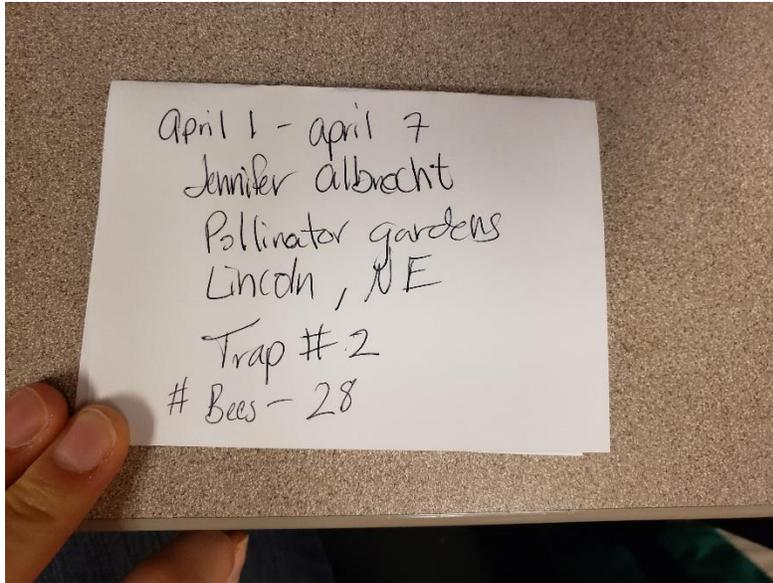
Location: put city, state, and specific apiary if you plan to place traps at more than one apiary

Sample Data entry:

Week	Collection Date	Location	Trap ID	# of dead bees in trap	# of sick or lethargic bees in trap	Notes
4/1-4/7	4/1	Pollinator Gardens	10	54	5	All old foragers
4/8-4/14	4/8	Pollinator Gardens	10	59	3	All old foragers
4/15-4/21	4/15	Pollinator Gardens	10	67	0	Saw Deformed wing, tested for varroa and found 4
4/22-4/28	4/22	Pollinator Gardens	10	112	12	Large increase in bees in trap some looked young, contacted Jennifer
4/29-5/5	4/29	Pollinator Gardens	10	45	4	Varroa test found 7 varroa. No diseases noticed
5/6-5/12	5/6	Pollinator Gardens	10	0	0	Storm last night, no bees collected

## Storage of bees

Collect, count, and store bees removed from the trap each collection. Ziploc bags or similar sealable bags are acceptable. Make sure to include trap identifier (number or name), your name, location, and the week on each bag. Permanent marker may rub off on bags so we recommend that information be written on paper in pencil and slipped into each bag. Store bags in the freezer. Depending on your location you can either send bees to me in the mail or I can pick them up if you are relatively local (Kansas, Nebraska). This may be important for discerning possible pesticide incidents or for further inspection should a problem arise in the hive.

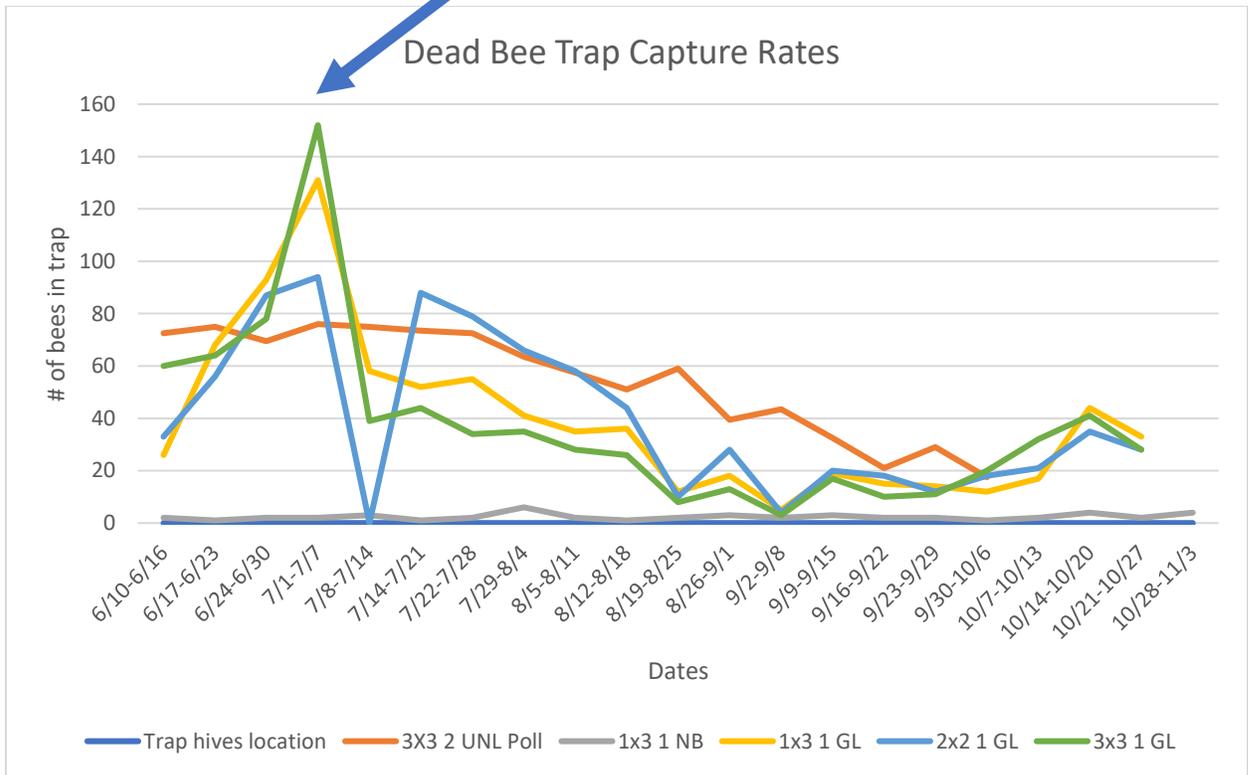


The importance of storing the bees is that if you see something unusual, we can look at this together and possibly determine some factors that we need to examine in the hive.

## You should contact me about potential pesticide incident when:

- Large increase in bees present in trap
- Very young fuzzy bees

This spike in captured bees from last summer could have indicated a pesticide incident and is a great example of when to contact me. If we can identify what caused the increase



Graph 1: This graph shows the capture for traps in Nebraska and Kansas in the summer of 2018. The drop during July 8<sup>th</sup> was due to a storm in Kansas that washed out the traps.

April 2019,

Dear Beekeeper,

My name is Jennifer Albrecht, I am a graduate student in the University of Nebraska-Lincoln Bee Lab. My advisor is Dr. Judy Wu-Smart and we have designed a research project that seeks to evaluate the impact pesticide residues have on colony health. The end goal is to develop tools that assist beekeepers in identifying pesticide incidents at the initial exposure. Proactive monitoring will allow beekeepers to investigate and alleviate adverse effects through timely management.

Thank you for assisting in the “Dead Bee Trap Monitoring” pilot program. Our goal for this pilot is to evaluate dead bee traps as an effective tool that will help not only monitor for pesticide incidents but also provide general knowledge about the health of your hive.

I have attached two forms that will help me to establish some baseline information before starting the pilot program as well as guide data collection while using the dead bee trap. Additionally, simple protocol on building and using dead bee traps have been included to standardize methods. If you have any further questions please feel free to email me. To streamline the process, title the email “dead bee trap”.

With your valuable feedback we will continue to refine monitoring protocols and materials so that beekeepers have the most economic and effective tool for monitoring bee health issues in your apiary.

Warm Regards,

Jennifer Albrecht

**Intake information:**

Participant Name and Contact:

Apiary Location(s) (State, County):

Week	Collection Date	Location	Trap ID	# of dead bees in trap	# of sick or lethargic bees in trap	Notes
4/1-4/7						
4/8-4/14						
4/15-4/21						
4/22-4/28						
4/29-5/5						
5/6-5/12						
5/13-5/19						
5/20-5/26						
5/27-6/2						
6/3-6/9						
6/10-6/16						
6/17-6/23						
6/24-6/30						
7/1-7/7						
7/8-7/14						
7/15-7/21						

7/22- 7/28						
7/29- 8/4						
8/5- 8/11						
8/12- 8/18						
8/19- 8/25						
8/26- 9/1						
9/2-9/8						
9/9- 9/15						
9/16- 9/22						
9/23- 9/29						
9/30- 10/6						
10/7- 10/13						
10/14- 10/20						
10/21- 10/27						
10/28- 11/3						
11/4- 11/10						
11/11- 11/17						