



CPHST CAPS Support Guidance: Pollinator bycatch

At times pollinators are captured in traps placed as part of CAPS surveys. Several states have raised concerns about pollinator bycatch collected in tri-color bucket traps. There have also been questions regarding whether the lures used for *Spodoptera littoralis*, *S. litura*, and *Helicoverpa armigera* are attractive to bees. CPHST CAPS Support is exploring how best to address pollinator bycatch. The goal is to create a comprehensive guidance document for the field that will include recommendations for reducing bycatch, instructions for pollinator bycatch sample processing and submission, and data entry. Feedback from the field on experiences with different traps and lures and the rates of pollinator bycatch will help to develop this guidance document. In the meantime, we can provide the following information and guidance.

Trap attraction

Blue, yellow, and white are known to be attractive to a wide diversity of bee species. One or all of these colors are found in traps used for native bee monitoring surveys. Lures are not available for most bee species. Bees are a diverse group (~4,000 species occur in U.S.) of mostly beneficial insects, leaving chemical communication largely undescribed. Spears et al. (2016) studied the effect of pheromone lures (comparing *Spodoptera littoralis*, *S. litura*, and *Helicoverpa armigera* (3 component)) and trap color (comparing yellow- white bucket traps and green bucket traps) on bycatch and found higher capture rates in the yellow-white bucket traps baited with OWB lure compared to the traps without OWB lure and to the green bucket traps (with or without the lure). However, they also found that bees were consistently attracted to the yellow-white traps that were not baited with OWB lure, suggesting color is the principle attractant. Additional research on trap color and lure specificity is needed to fully understand the interaction. During the upcoming field season, CPHST will further examine the impact OWB lure and trap color have on pollinator bycatch.

Reduce bycatch

If pollinator bycatch is a consistent issue, we recommend moving these traps to a different location within the site. When possible traps should be placed away from flowering plants, paying close attention to proximity to field borders, hedgerows, community gardens, etc. If moving the trap does not reduce bycatch, an entirely new site should be selected. If this is not possible or bycatch is still an issue, contact Heather Moylett and Lisa Jackson to discuss other options. In an effort to reduce pollinator bycatch, CPHST will investigate how lure and trap color impact pollinator bycatch volume, local pollinator populations and communities, and target pest detection.

Pollinator bycatch samples

We need help from the CAPS community to understand the scope of pollinator by-catch to develop prevention guidance. Please alert your staff to check for higher than normal numbers of bees in traps when traps are serviced. If you are experiencing bee by-catch (honey bee, bumblebee, or other bee) that is higher than normal in your experience, please provide any bee

data you have to [Heather Moylett](#) and [Lisa Jackson](#). Please include the following information (critical data in red):

- **Date**
- **Crop/Survey**
- **Trap**
- **Lure**
- **Target species**
- **Bee by-catch count broken down by: honey bee, bumble bee, other bee**
- Year you bought bucket traps and source (were the traps purchased through PPQ's Survey Supply Ordering System or directly from a vendor?)
- Year you bought lures (were the traps purchased through PPQ's Survey Supply Ordering System or directly from a vendor?)
- Other crops or plants flowering on property (e.g., hedgerows, grower provided pollinator habitat, etc.)
- Where the trap was placed (within crop (and which crop), in hedgerow, etc.)

If possible, please keep pollinator bycatch samples. Samples can be stored dry in a glassine envelope or container (plastic or glass) and placed in the freezer, or alternatively each specimen can be pinned. Please keep the samples/specimens separated by location and date. If you are interested in performing preliminary bee identification, refer to the Discover Life bee identification guides: <http://www.discoverlife.org/mp/20q?search=Apoidea#Identification>.

In addition to bee bycatch data, please send your questions and pollinator bycatch experiences to [Heather Moylett](#). All feedback is welcome, but we are especially interested in the following:

- Has moving traps away from flowering plants helped to reduce the number of pollinators captured?
- What are you currently doing with pollinator bycatch?
- Have you had issues with pollinator bycatch in other traps?
- Once we move to the pollinator identification stage, do you want to receive a report of the data (i.e., species identifications, etc.)? It is unlikely that bee data will be captured in NAPIS or IPHIS, but the data may be relevant to ongoing native/exotic bee monitoring programs in your state.

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Spears, L. R., C. Looney, H. Ikerd, J. B. Koch, T. L. Griswold, J. P. Strange. 2016. Pheromone lure and trap color affects bycatch in agricultural landscapes of Utah. *Environmental Entomology* 45(4): 1009-16. PDF available through the [DigitalCommons@USU](#).