Collection Tips for Stink bugs
Summer 2017

- **What is an "egg mass?"** Many insects lay their eggs singly, such as Monarch butterflies. Stink bugs are insects that lay many eggs in a group or mass on a plant. Depending on the species of stink bugs, the number of eggs will vary. Brown marmorated stink bugs (BMSB) almost always lay 28 eggs in their masses, for example.
- **What does an egg and egg mass look like?** The most important character to identify a stink bug egg mass is the shape of the individual eggs. By themselves, each egg looks like a small barrel or cylinder. An egg mass is simply the collection of many small "barrels" sitting side by side (see below).
- **What are egg mass sizes?** Egg masses are different sizes depending on the species of bug that laid them. Most egg masses in our area will be as small as a ¼" by ¼" up to ½" by ½" or a tiny bit larger.
- **What are egg mass colors?** Each stink bug species lays eggs that are a different color, too. Brown marmorated stink bug eggs are a light green-blue when they are freshly laid (top row, center in the figure below). A predaceous stink bug has dark brown shiny eggs (bottom row, right).
- **A visual aid:** Please see the images below to see the diversity in appearances of stink bug egg masses!

Images taken by Ashley Colavecchio and Christine Dieckhoff (USDA-ARS). Hoelmer et al (*in prep*)

- **Look a-like:** Moth eggs are laid in egg masses, too. Some key differences between stink bug egg masses and those of moths are: moths lay hundreds of much smaller eggs and moth eggs will have an iridescent sheen. Stink bug eggs generally have a "matte" appearance. If you are in doubt, please send a moth egg mass in, too! We can monitor if for emergence of parasitoids just like a stink bug egg mass.
- **Where do I search (habitat)?** Stink bugs are really common insects but stay hidden much of the time. One way to collect egg masses is to visit habitats where you have seen adult stink bugs before (typical shape of adult stink bugs below, left). Most of the common stink bugs are brown and green; harlequin bugs are black with orange spots. BMSB is a species found in people's homes, so many residential yards are likely to have these bugs. BMSB is also associated with wooded edges (see below), so populations of bugs might occur in parks with a border of trees.
- **Where do I search (on a plant)?** Stink bug egg masses are almost always laid on the underside of leaves. You can stand beneath a tree and look up to see them. See circles below, right, with egg masses (white patches) with recently hatched nymphs of stink bugs (black) surrounding the white patch. When looking at a shorter shrub, hold a branch and quickly look at the underside of each leaf. Start on one side of the plant and gradually circle around it to make sure you have looked on all sides.

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- **What host plants do I search in my yard or neighborhood park?** Most of our stink bugs are generalist feeders on plants, with the exception of harlequin bug, a specialist on mustards. Stink bugs can be found in row crops (soybeans and corn), as well as in fruit trees, vegetables, and ornamental plants. A lot of work has been done to determine what preference for host plants many species have. For example, we know that BMSB is common on **ornamental plants**, including those listed in order by preference here: *Syringa* (lilac), *Sophora* (e.g., Japanese pagoda tree), *Evodia* (e.g., Korean evodia and bee tree), *Acer* (maples, especially red maple), *Cercis* (redbud), *Malus* (apples), *Ulmus* (elms, especially American elm), *Ficus carica* (common fig), *Cladastris* (yellowwood), and *Liquidambar* (e.g., American sweetgum).
- **What host plants do I search near woods?** We actually recommend that you don't search for egg masses in the woods, <u>just along the edge of the woods</u>. BMSB is a species of stink bug that can be found along edges of habitats (within 6 feet from the forest edge). BMSB are regularly collected from the invasive tree of heaven (*Ailanthus altissima*) as well as from native trees, such as black cherry (*Prunus serotina*), sassafras, and hackberry (*Celtis occidentalis*) and naturalized trees, such as black locust (*Robinia pseudoacacia*). Rebeccah and Paula have collected brown stink bug egg masses from red maples (*Acer rubrum*).
- **What NOT to search?** A general rule of thumb is to avoid searching any conifer / evergreen. Stink bugs are rarely seen on the leaves of oak trees (*Quercus* spp). (We will see adults on the trunks of trees sometimes but not on the leaves.)
- **I found an egg mass, but the eggs have holes in them!** Please collect it any way! The holes could mean a couple of things. 1) The bug nymphs (or babies) have hatched and walked away. They leave their eggs behind. 2) The parasitoids have emerged from the eggs. After wasps emerge, they leave a hole in the egg where they chewed out (see figure below, left). We can still use this information, even if the wasps have all gone. We can sometimes tell what wasp emerged even if no one is home. We also want to look at parasitism rate, so we can figure out based on a parasitized egg mass how effective the wasps were at killing the bug nymphs.
- **I found an egg mass, but there is a small black dot on it.** Many female wasps will remain with an egg mass to guard her own eggs that she laid inside stink bug eggs (figure below, right). If you encounter an egg mass with a parasitoid on it, please try to keep the wasp with the egg mass. These wasps often don't move from the eggs, so you can quickly slip the egg mass intro a petri dish before the wasp flies away. Don't worry if the wasp flies away, though. On your datasheet, for the egg mass that you are collecting, please make a note that a wasp was guarding. The relative size of a parasitoid to a BMSB egg mass (1 cm by 1 cm) is shown below, right.

- **Time of day:** We recommend searching first thing in the morning when the sunlight is weakest. When standing underneath the tree looking up at the underside of leaves, diffuse bright light will help you to see the discoloration caused by the presence of an egg mass.

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