

Samurai Wasp

Promising egg parasitoid for management
of Brown Marmorated Stink Bug (BMSB)



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What is the samurai wasp?

Trissolcus japonicus, known by the common name samurai wasp, is a parasitoid. It attacks the eggs of BMSB (an invasive stink bug that damages fruits and vegetables in commercial agriculture and residential gardens) making it a potential candidate for managing BMSB.



◀ Figure 1. Adult samurai wasp. Black line indicates actual length (1.5 mm).

▶ Figure 2. A freshly laid BMSB egg mass typically has 28 eggs. Eggs are laid on the underside of leaves or branches of many types of trees, shrubs, and ornamental plants. They are easiest to detect on broadleaf plants.



BMSB eggs have two primary emergence pathways:

1 Development to nymph



◀ Figure 3. Black triangles indicate BMSB embryo development (unparasitized).

▶ Figure 4. BMSB nymphs several days after emergence from eggs



◀ Figure 5. Adult BMSB

2 Parasitoid emergence



◀ Figure 6. Samurai wasp identifies BMSB eggs and begins to lay eggs.

▶ Figure 7. After several days, parasitized eggs darken.



◀ Figure 8. Adult samurai wasps emerge from eggs by chewing their way out.

How do I detect samurai wasp?

Samurai wasp is a small (1.5 mm), black, mobile insect that is difficult to detect in the field. The wasp is best detected by the following ways:

- Wasp walking on BMSB egg mass to “guard” its freshly laid eggs (Fig. 6)
- Darkened BMSB eggs that will soon hatch into adult wasps (Fig. 7)

Why is samurai wasp important for managing BMSB?

BMSB is established in Oregon and lays eggs throughout summer, so there is a consistent availability of host eggs. The use of beneficial insects for biological control is an effective method for managing pests while reducing the need for insecticides.

Aren't other insects useful for managing BMSB?

Yes, several insect predators consume BMSB eggs and nymphs. Another species of wasp also parasitizes BMSB eggs (Fig. 9), but the samurai wasp is the superior parasitoid because it restricts egg-laying to BMSB eggs.



Figure 9. BMSB egg mass with irregular, circular emergence holes from samurai wasp. Samurai wasp (black wasp to the right of the egg mass) is smaller and wider than *Anastatus* spp. (lower right), another wasp that parasitizes BMSB eggs.

Where is samurai wasp found?

It is native to China, Japan, and Korea, the same native range of BMSB. Like BMSB, samurai wasp was accidentally introduced to the United States. In the western United States, the wasp was first recorded in Vancouver, Washington in 2015, and in Portland, Oregon in 2016. It is most likely to be detected in wooded areas.

Help OSU researchers map samurai wasp's distribution across Oregon!

If you see evidence of parasitized egg masses, visit <http://agsci.oregonstate.edu/bmsb> for information on how to report a finding.

Photo credits

Figures 1–8:

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Figure 9:

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