Brown Marmorated Stink Bug (BMSB) in Southern Interior B.C. 2020

January 15, 2021

Monitoring

Pheromone-baited traps were set up to monitor brown marmorated stink bugs in residential areas and a few orchards in the Okanagan, Similkameen and Creston valleys from April - October 2020.

Trap Captures

Since 2016, BMSB has been detected in most regions of Interior B.C. except Cawston, Okanagan Falls, Peachland, Enderby and Creston (Figure 1). In 2020, 97% of the BMSB trap captures were from Central (downtown) Kelowna (Table 1). Most of the detection sites were urban or regional parks and there was only one orchard site.

BMSB average weekly trap captures in Central Kelowna were lower than 2017 and 2018 (Figure 2). In comparison to 2019 weekly trap captures, similar numbers of BMSB were caught in May-July, lower numbers in August/September and higher numbers in October in 2020 (Figure 2). There was a sharp drop in average weekly trap capture from 11.79 in the week of October 22 to 1.35 in the week of October 29, 2020 due to an early snowfall with a sudden drop in temperatures (Figure 2). Trapping was terminated after the snowfall. Although BMSB numbers were low in 2020, BMSB is slowly spreading out in the Kelowna area (Figure 3).

Figure 1. Brown marmorated stink bug detections in Interior British Columbia, 2016 – 2020.

Table 1. BMSB trap captures in Interior B.C., 2017 – 2020

Region	Number of traps (2020)	Adults (2020)	Nymphs (2020)	Total BMSB (2020)	Mean BMSB/trap/season			
					2020	2019	2018	2017
Central Kelowna	43	1443	351	1794	41.72	55.44	79.92	36.10
East Kelowna	3	4	22	26	8.67	14.50	0.00	1.00
South Kelowna	1	0	0	0	0.00	0.00	0.00	0.00
West Kelowna	6	5	0	5	0.83	2.67	0.18	1.20
Ellison	2	0	0	0	0.00	0.00	0.00	0.00
Glenmore	10	6	1	7	0.70	2.14	0.00	0.60
Rutland	8	7	0	7	0.88	0.14	0.33	1.10
Salmon Arm	6	0	0	0	0.00	0.18	0.00	0.30
Enderby	1	0	0	0	0.00	0.00	0.00	0.00
Armstrong	1	0	0	0	0.00	1.00	0.00	0.00
Vernon	6	2	0	2	0.33	0.11	0.06	0.20
Winfield	4	0	0	0	0.00	0.13	0.00	0.20
Oyama	3	2	0	2	0.67	0.00	0.14	0.00
Carr's Landing	2	1	0	1	0.50	0.00	0.00	0.00
Peachland	2	0	0	0	0.00	0.00	0.00	0.00
Summerland	7	3	4	7	1.00	0.00	0.00	0.00
Penticton	7	1	0	1	0.14	0.00	0.10	0.60
Naramata	4	1	0	1	0.25	0.00	0.00	0.00
Okanagan Falls	1	0	0	0	0.00	0.00	0.00	0.00
Oliver	4	1	0	1	0.25	0.00	0.11	0.00
Osoyoos	4	1	0	1	0.25	0.40	0.06	0.60
Keremeos	3	0	0	0	0.00	0.00	0.20	0.00
Cawston	2	0	0	0	0.00	0.00	0.00	0.00
Creston	4	0	0	0	0.00	0.00	0.00	0.00
Total (2020)	134	1477	378	1855				

Hosts

Host plants of brown marmorated stink bug recorded in Southern Interior B.C. include wild chokecherry, maple, lilac, honey locust, tree of heaven, mountain ash, scarlet firethorn, shiny cotoneaster, catalpa, magnolia, snowberry, hazelnut, rose, rose of Sharon, cedar, Virginia creeper, ash, elderberry, gingko, sumac, hops, runner bean, Oregon grape, privet and prickly lettuce.

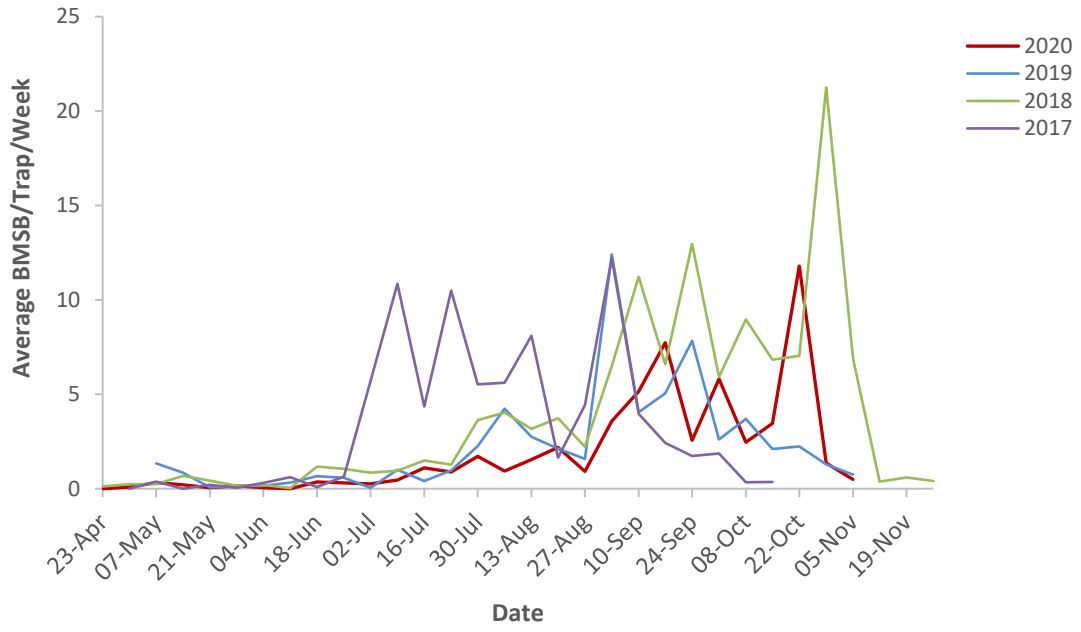

Figure 2. Average weekly brown marmorated stink bug trap captures in Central Kelowna, 2017 – 2020

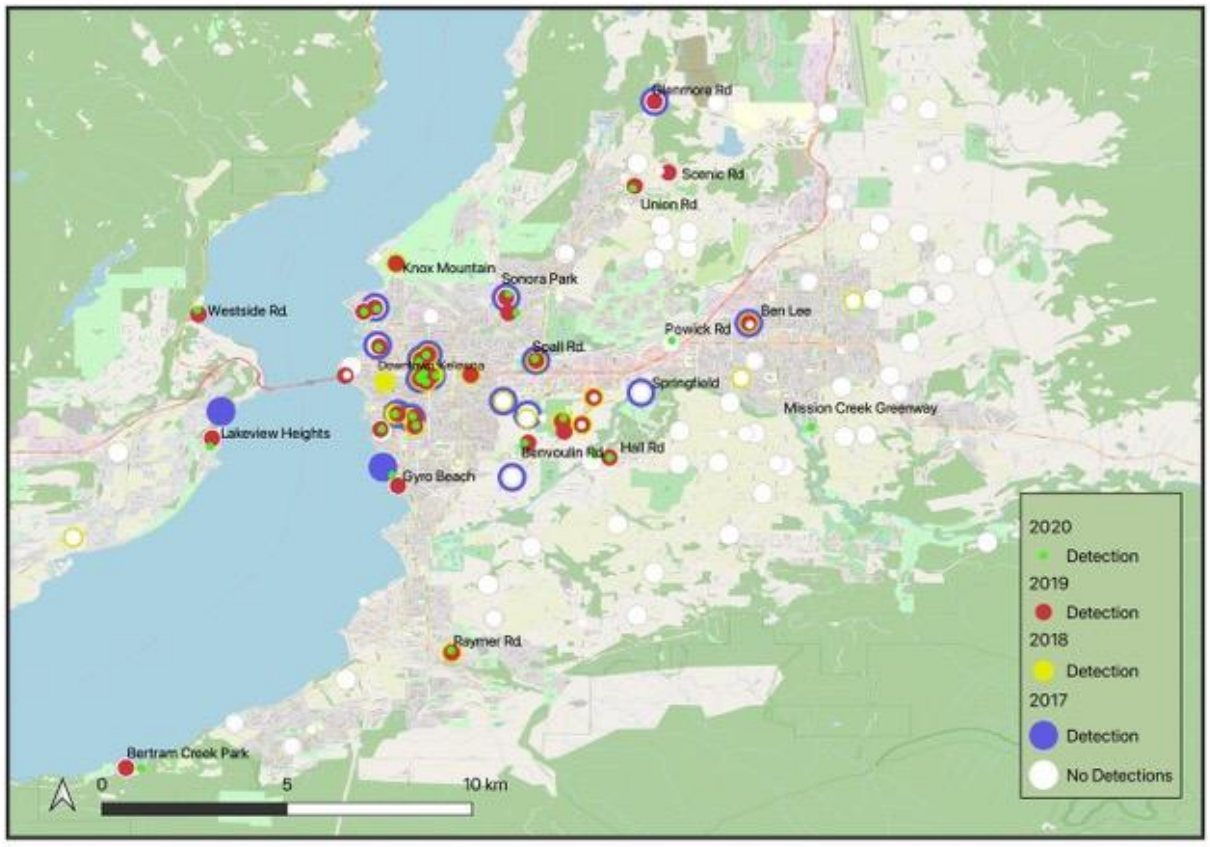

Figure 3. Brown marmorated stink bug detections in Kelowna, 2017-2020. White bubbles represent sites with no detections. Each coloured bubble represents a detection site. The top coloured bubble represents the most recent year. For example, a red bubble on top of a white bubble represents a site with a new detection in 2019.

Biological control

Due to COVID-19 restrictions, we were unable to place BMSB egg masses at infested sites in Kelowna for predators and for rearing out parasitoid wasps and no surveys were conducted by Agriculture and Agri-Food Canada (AAFC) for the samurai wasp in the lower mainland of B.C.

The samurai wasp which attacks BMSB eggs and provide control of BMSB in China was detected in Coastal BC (Chilliwack) in 2018 (Dr. Paul Abram, AAFC Agassiz Research and Development Centre). The wasp has not been detected in Interior B.C. It has been found in the United States and continues to be released in Washington, Oregon and other eastern States for BMSB control. Canadian Food Inspection Agency (CFIA) approval is required to intentionally release or redistribute the samurai wasp in B.C. A petition submitted to the CFIA in August 2018 for the intentional release of samurai wasp in Canada was reviewed and rejected by CFIA in March 2020 due to concerns about the samurai wasp attacking beneficial and other native stink bug eggs.

Additional data regarding the relative safety of different strains (i.e., the strains detected in BC and Ontario versus the one being considered for introduction) of the samurai wasp will be needed to resubmit the petition. These experiments have been delayed by restrictions associated with the pandemic but are planned to be done by AAFC (Agassiz, BC; London, Ontario) in 2021, with the goal of submitting a revised petition containing the required data in late 2021 or early 2022.

BMSB Degree Day Model

Dr. Sarah Amundrud, a postdoctoral researcher and teaching fellow at UBC (Okanagan campus) is working on a brown marmorated stink bug development and a degree day model project. The project is funded by the BC Fruit Growers Association. Collaborators on the project are Dr Susanna Acheampong (BC Ministry of Agriculture, Food and Fisheries) and Dr Paul Abram (AAFC Agassiz Research and Development Centre). The work is still in progress.

Summary

- Monitoring in Interior BC in 2017 - 2020 indicates that BMSB is established at high numbers in Central Kelowna and slowly spreading out to other areas in Kelowna.
- Low numbers of BMSB were detected in 1 orchard in 2020.
- No surveys were conducted for the samurai wasp in 2020.
- Check the Ministry of Agriculture, Food and Fisheries BMSB web page www.gov.bc.ca/invasivestinkbug for more information.

Plans for 2021

There will be a BMSB monitoring and biological control project in 2021. Traps will be serviced and redistributed for optimal surveillance and the number of traps in new detection sites will be increased. Ministry of Agriculture, Food and Fisheries staff will collaborate with Agriculture and Agri-Food Canada research scientists, industry and other partners on the project.

Acknowledgements

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participating growers and homeowners. A big thank you to BMSB committee members for their time and dedication.

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Brown marmorated stink bug adult

Brown marmorated stink bug nymphs