BARK BEETLE

SURVEY REPORT

UBC OKANAGAN CAMPUS GROUNDS

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BARK BEETLE SURVEY REPORT - UBC OKANAGAN

A bark beetle survey was carried out on UBC Okanagan Campus forest areas including the forested eastern portion of Endowment Land during January 8 - 15, 2019. Pine trees including those around buildings were examined for new beetle attacks following the 2018 bark beetle flights. Douglas-fir trees were also examined. This report provides survey methodology, survey results and recommendations for control.

Survey Method

A walk through survey was done looking for any signs of foliage color change and evidence of new attack on pine and fir tree stems. Trees showing foliage color change as well as stems of trees with insect evidence such as pitch tubes, boring frass or woodpecker activity were checked for beetles by removing some bark and looking for insect evidence such as galleries, adult beetles and larvae. Galleries and insects were observed to determine if they were Western pine beetle (WPB) or Mountain pine beetle (MPB) and recorded. Similarly,Douglas-fir trees were checked for Douglas-fir beetle (DFB) attack. All pine and fir trees around infested trees for a minimum distance of 15 meters were closely examined for signs of beetle attack to ensure all infested trees were identified and marked for removal. All pine trees around buildings including trees with verbenone repellent pouches were closely examined as well.

Yellow flagging tape was placed around the boles of currently infested and older attacked trees. The numbers of attacked trees as well as diameter range and average diameters were recorded. Attack sites were plotted on a map. The number of attacked trees were noted on orange flagging tape and placed on a tree along with yellow tape at each currently infested site. In many instances, the sites were flagged with orange tape to a road, trail or forest edge and tie points established with orange and yellow tape.

Bark Beetles Observed

The survey indicated that WPB have attacked a small number of trees. The number of pine trees attacked are near the lowest since the surveys commenced in 2006. The 2018 Lindgren funnel trapping resulted in the lowest numbers collected since trapping commenced. Douglas-fir bark beetles were not evident. Mountain pine beetles were not observed on the Campus this year.

Some of the attacked pines had little or no evidence of attack on the stems. The trees had to be examined very closely and in a lot of cases bark had to be removed to confirm that the trees were infested. It is possible that some trees could be infested higher up. Trees with significant browning due to needle disease may have secondary bark beetles such as Ips beetles attacking the weakened branches causing additional branch mortality. Woodpecker activity was quite prevalent this year and more so than previous years.

Verbenone Repellent Usage

There were 200 verbenone repellent pouches placed on high value aesthetic trees around campus buildings and other important areas last summer. The trees with pouches and surrounding trees were closely examined during this survey. One of the repellent treated trees was attacked and is located near the pond. The repellent use has been quite effective although the repellents used in 2018 were from a different supplier and may not be as effective.

Present Infestations

Twenty-one pine trees at eleven sites were marked and recorded as having western pine beetle infestations. Also, one pine tree was identified as a suspect tree. The tree has significant foliage colour change with a good possibility bark beetles have attacked the upper portion of the tree stem. Many of the trees were older attack with red foliage that likely have current beetle adults and larvae remaining in the trees. Also, some trees were quite green and had heavy attack levels. Attacked pine trees ranged from 1 to 9 per site with an average of 2 per site. The tree diameters ranged from 10 to 53 cm with the average being 23 cm.

Douglas-fir trees were looked at during this inspection with no evidence of Douglas-fir bark beetle infestations seen. Some fir trees appear stressed probably due to moisture deficit.

Refer to the attached data table and map for infestation details and locations.

Summary

The numbers of pine beetle attacked trees are near the lowest level since surveys commenced in 2006 with twenty-one trees plus one suspect tree being identified and marked as having western pine beetles. The infestations are from WPB with no evidence of MPB being observed during this survey. The numbers were lower in 2016 and 2017 but the same as 2014.

The neighboring properties close to the Campus do not show much evidence of pine beetle infestations other than the golf course having a few trees changing colour indicating possible beetle attack. The pine beetle population in the area seems to be very low and near endemic at the present time. Other areas in the valley are showing endemic levels.

Douglas-fir beetle evidence of attack on fir trees were not seen during this inspection. The insect should not be very problematic in future since Douglas-fir trees are a minority species on Campus.

Refer to the attached history of bark beetle survey results on UBCO Campus.

Recommendations

1. Control the spread of the bark beetles from the infested trees before April 15, 2019 by removing the trees from UBCO property and disposing of the infested portions of the trees in a manner that would destroy the insects prior to beetle flight. Remove the entire trees including branches and foliage from the attack sites for fire hazard and aesthetic reasons.
2. Avoid damage to trees that are to be saved in order to prevent tree stress and reduce risk of beetle attacks. Bark beetles are attracted to stressed trees.
3. Continue to monitor Campus trees for evidence of bark beetle infestations and remove infested trees effectively. Recommend summer and winter surveys be done next fiscal year.

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January 22, 2019

PINE BARK BEETLE SURVEY DATA SUMMARY

UBC OKANAGAN - JANUARY 2019

GENERAL LOCATION	SITE	ATTACKED TREES G	ATTACKED TREES R	TREE DIAMETERS (cm) Range	TREE DIAMETERS (cm) Avg.	INSECTS WPB	INSECTS MPB	ATTACK LEVEL	COMMENTS
North West	A	2		23-25	24	x		H	Close to trail
	B	1		20-27	24	x		M	Foliage changing colour.
		1 Suspect							30m from trail.
	C	1			29	x		M	Green foliage. Woodpecker activity
North Central	D	1			20	x		H	Red foliage. Woodpecker activity
									40m West of Reservoir Road.
	E	1			26	x		M	Red foliage. 80m from road.
	F	2		19-21	20	x		H	Near gas line. Woodpecker
									activity on both trees.
	G	1			26	x		M	Forked top. 50m from
									gas line. Woodpecker activity
	H	1			29	x		M	Red foliage. Near gas line.
South	I	1			15	x		M	Behind trailer office.
	J	1			53	x		M	Near pond. Woodpecker activity
	K	9		10-30	20	x		H	South-West of Gym.
									Some woodpecker activity.
TOTALS		21							
		+ 1 Suspect							

LEGEND

G - Trees with current beetle populations
R - Red foliage trees - No current beetles.

M - Moderate attack level
H - Heavy attack level

HISTORY OF BARK BEETLE SURVEY RESULTS ON UBCO

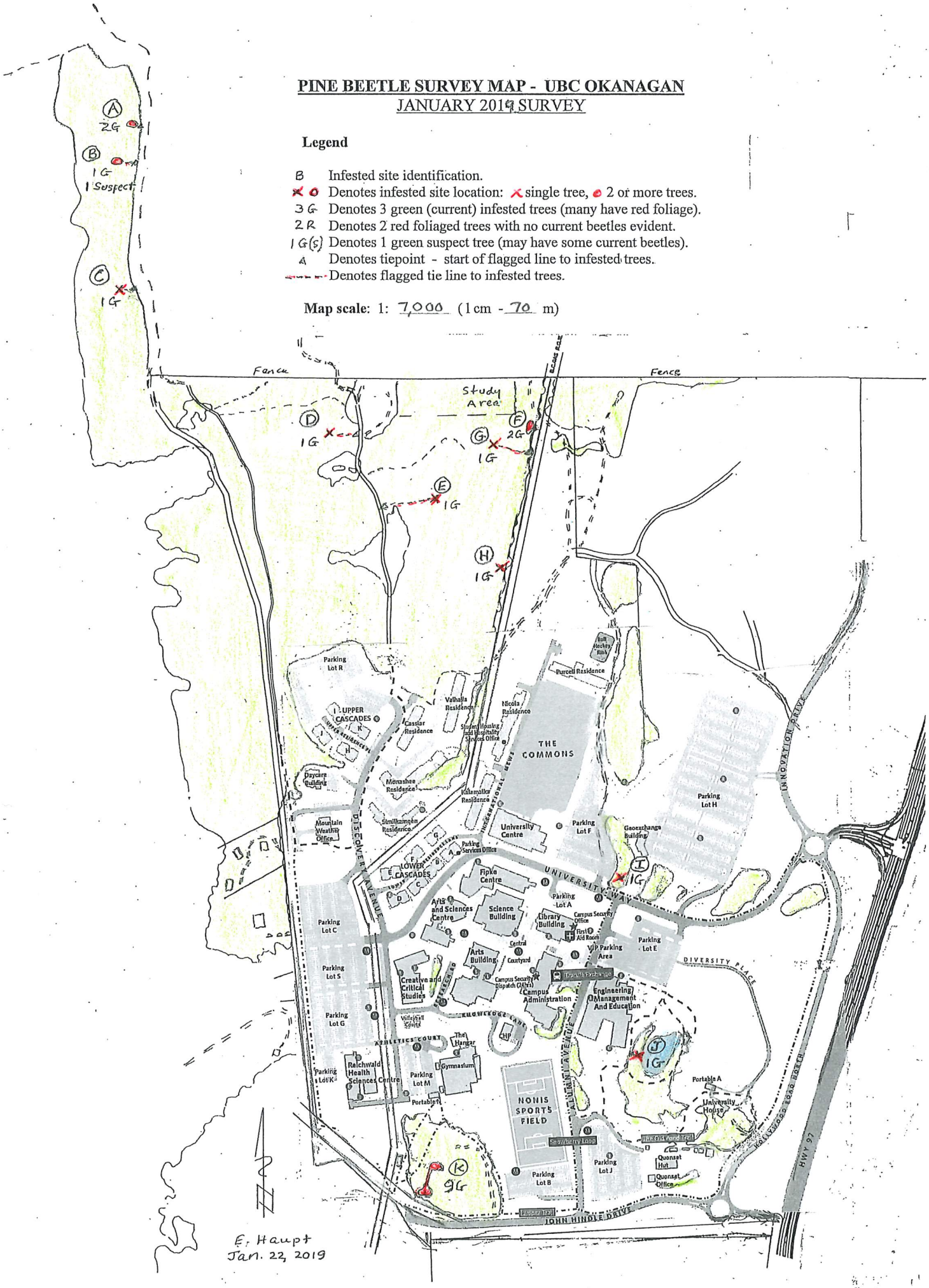
YEAR	ATTACKED PINE TREES (WPB AND MPB)	ATTACKED FIR TREES (DFB)
2005	126 (also 139 old attack)	0
2006	168	0
2007	347	0
2008	357	0
2009	349	0
2010	263	0
2011	483	0
2012	156	0
2013	67	0
2014	22	0
2015	34	0
2016	15	3
2017	11	2
2018	22	0
TOTALS	2,420 (also 139 old attack)	5

PINE BEETLE SURVEY MAP - UBC OKANAGAN
JANUARY 2019 SURVEY

Legend

B Infested site identification.
✕ ● Denotes infested site location: ✕ single tree, ● 2 or more trees.
3 G Denotes 3 green (current) infested trees (many have red foliage).
2 R Denotes 2 red foliaged trees with no current beetles evident.
1 G(S) Denotes 1 green suspect tree (may have some current beetles).
A Denotes tiepoint - start of flagged line to infested trees.
Denotes flagged tie line to infested trees.

Map scale: 1: 7,000 (1 cm - 70 m)



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