

PINE BEETLE SURVEY REPORT - UBC OKANAGAN

A pine bark beetle survey was carried out on UBC Okanagan Campus forest areas including the forested eastern portion of Endowment Land January 4 - 12, 2012. Pine trees including those around buildings were examined for new beetle attacks following the 2011 bark beetle flights. 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 the pine tree boles. Trees showing foliage color change as well as boles 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. All pine trees around infested trees for a minimum distance of 20 meters were closely examined for signs of beetle attack to ensure all infested trees were identified and marked for removal. Green flagging tape was placed around the holes of currently infested 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 pink flagging tape and placed on a tree along with green tape at each currently infested site. In many instances, the sites were flagged with pink tape to a road, trail or forest edge and tie points established with pink and green tape. All pine trees around buildings including trees with verbenone repellent pouches were closely examined as well

Pine Beetle Observed

The survey indicated considerable WPB populations as well as some MPB. The MPB populations appear to be declining somewhat. Lindgren funnel trapping using WPB lures in 2011 collected the largest number of WPB since trapping was initiated. Trapping for MPB has not been effective and was discontinued four years ago. Some minor Red Turpentine beetle (RTB) attacks at base of some trees were observed. The damage is relatively insignificant. Larger numbers of RTB attack on trees can weaken the trees and render them susceptible to other pine beetle attacks.

Alot of pine trees appear very stressed. Many have thinning foliage on the top and appear like they may have been attacked by pine beetles but there was no evidence of beetle attack on the boles of the trees. Also, the majority of the attacked pines had little or no evidence of attack on the tree boles. 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 very possible that more trees are infested higher up.

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. The repellents were effective. None of the trees with verbenone repellents or adjacent trees were attacked.

Present Infestations

A total of 481 currently attacked trees plus 2 red trees at 40 sites were recorded. Four of the sites (21 trees) are on the Endowment Land. There are 12 sites with more than 20 attacked trees. Three sites have between 46 and 56 attacked trees each. Diameters of attacked trees range from 7 to 39 cm with average of about 16 cm. The majority of the trees are infested with WPB and to a lesser extent with MPB. A large number of trees were attacked by both insects. A small number of trees have a few red turpentine beetle hits at the base of the trees. The majority of the trees marked have red foliage but there are still insects (adults and larvae) in the cambium layer or within the bark. There are also a total of 10 red foliage trees at 9 other sites. The red

foliage trees are older attacked trees with no obvious current beetle populations. The trees were not marked and are shown on the map but not shown on the survey data table.

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

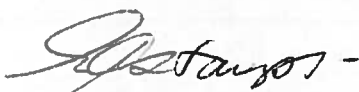
Previous Years Survey (2011)

Twenty-two sites and 260 trees that were flagged for removal in January 2011 were also checked during this survey. Trees at most of the sites were not removed although trees were removed from three largest sites for a total of 165 trees being removed from five sites. Most of the trees were not completely removed from the campus prior to beetle flight. Trees at eight sites totaling 40 marked trees were felled as well as tie point trees and not removed. Also trees at nine sites totaling 55 marked trees were not touched and are still standing. Beetles left the felled and standing marked trees and were attracted to the funnel traps or infested other trees near by. A large number of current infested trees were located adjacent or in close proximity to last years infested sites. The tie points with blue flagging tape identifying the previous survey were re-established to provide info for removal of the trees. The sites are not shown on this years survey map or data table but notes have been made on the 2011 survey data table and map which is attached. The dead standing and felled trees add to the fire hazard risk and should be removed.

Recommendations

- 1 Control the spread of the pine beetle from currently infested trees prior to April 21 2012 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.
- 2 The entire infested trees including branches and foliage should be removed from the sites for fire hazard and aesthetic reasons.
- 3 Consider removing the remaining marked standing and felled trees from the January 2011 survey to eliminate the fire hazard risk they pose.
- 4 Reduce the risk of further attack and mop up residence populations by continuing with the following initiatives.
 - A) Continue to place Lindgren funnel traps with Western pine beetle lures in open areas away from pine stands similar to the 2011 program.
 - B) Continue to place verbenone pine beetle repellent pouches on trees at maximum 15 x 15 m spacing within highly valued areas such as forested areas, around buildings, along walkways and roadway corridors.
- 5 If possible, endeavor to ensure neighboring property owners are aware of and are dealing with infestations on their properties prior to beetle flight in order to reduce risk of insect spread onto UBCO property.
- 6 Carry out follow up bark beetle surveys checking for and marking attacked trees for removal after beetle flights annually.

Survey data table and map for this years survey is attached. Also attached is a copy of last years survey data sheet and map with comments.



Eric Haupt
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PINE BARK BEETLE SURVEY DATA TABLE
UBC OKANAGAN - JANUARY 2012

GENERAL LOCATION	SITE	ATTACKED TREES		TREE DIAMETERS (cm)		INSECTS		ATTACK LEVEL	COMMENTS
		G	R	RANGE	AVG.	WPB	MPB		
North West	A	1			19	X		M	On Endowment land (north east).
	B	1			20	X		M	On Endowment land (north east).
	C	4		8-18	13	XX	X	M-H	Mostly green foliage. Good access.
	D	26		10-23	16	XX	X	M-H	Close to trail.
	E	48		10-30	18	X	X	L-H	Easy access. Near 6 felled and left.
	F	8		9-21	16	X		M	Beside 17 left from last year.
	G	7		15-23	19	X		M-H	Between road and trail.
	H	6		13-33	20	X	X	M	Both sides of trail.
	I	4		8-15	9	XX	X	H	15m from trail.
	J	21		11-24	20	XX	X	L-H	Close to road and opening.
	K	4		10-15	12	X	X	M-H	Good access. Mostly green foliage.
	L	2		11-12	12	X		M	Adjacent 13 felled and left.
	M	2		22-28	25	X		M	Near 5 trees felled and left.
	N	2		12-25	18	X		M	Close to road.
	O	18		12-32	18	X	X	M-H	On Endowment land (south east).
	P	1			13	X		M	On Endowment land (south east).
North Central	Q	22		10-29	15	XX	X	M-H	Within study area.
	R	9		12-25	18	X		M-H	Within study area. 5 with tags.
	S	46		7-28	12	X	X	L-H	All but 1 in study area. 6 tagged.
	T	12		10-30	15	X	X	M-H	Around 12 patch felled and left.
	U	1			16	X		M	Close to trail.
	V	1			16	X		M	Next to trail.
	W	2		25-26	25	X		M	Next to 1 left standing from 2011.
	X	21		9-22	14	XX	X	M-H	Close to trail.
	Y	13		11-29	16	XX	X	M-H	12m to road. Near 4 felled and left.
	Z	5		10-27	18	XX	X	H	Older attack. Near opening.
	a	10		10-26	15	X	X	M-H	2 trees felled and left at site.
	b	56		9-24	15	XX	X	L-H	Around 2011 patch of 15.
	c	35		10-35	18	XX	X	L-H	Near road 7 felled and left at site.
	d	1			14	X		M	2 felled and left near side.
	e	3		18-25	21	X	X	M	Between gas line and residence.
North East (East of gas line)	f	1			20	X		M	In opening East of gas line.
	g	2		24-24	24	X		M	15m from road.
	h	5	2	13-20	16	X	X	M-H	12m from fence.
	i	24		8-32	14	XX	X	L-H	Between upper road and fence.
	j	24		8-35	16	XX	X	M-H	Between upper road and opening.
South West	k	21		12-36	20	XX	X	M-H	Both sides of fence.
	l	2		14-22	18	X	X	M	Good access. 12m from fence.
	m	7		10-39	18	XX	X	M-H	Next to 2011 patch of 4 still standing.
South East	n	3		21-30	24	XX	X	M-H	Good access.
TOTALS		481	2						

Legend

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

L - Light attack level
M - Moderate attack level
H - Heavy attack level