

Towards a management plan for the western hemlock looper in Stanley Park

The western hemlock looper (WHL), *Lambdina fiscellaria lugubrosa* (Lepidoptera: Geometridae) is the only native conifer defoliating insect that has reached epidemic tree-killing levels in Stanley Park in the past to warrant aerial spraying to protect the forest; once in 1930 and again in 1959 (Richmond 1986). This defoliator is a late summer flier, together with its closely related geometrid cousin, the phantom hemlock looper *Nepytia phantasmaria*. The biology of the WHL is well reviewed by Koot (1994).

In 2008 we set out three pheromone-baited high-capacity Unitraps for the WHL near the south end of Beaver Lake along the South Creek Trail and another three traps near the Hollow Tree at the southern end of Merilees Trail. The moths fly mainly in September. The Individual trap catches are shown in Figure 1. The traps were set out in September and October. Most moths (94%) were captured in September.

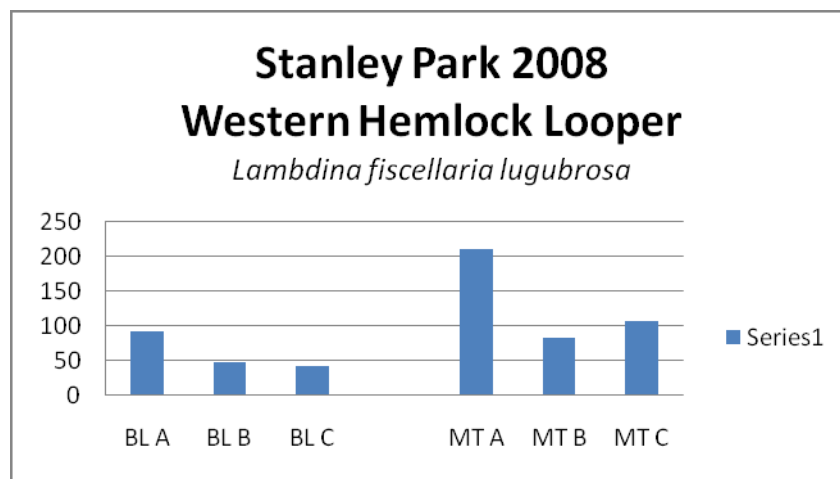


Figure 1: Catches of the western hemlock looper in each of three traps set out in September and October 2008 on the southern margin of Beaver Lake (BL) and near the Hollow Tree and Merilees Trail (MT).

Slightly higher numbers of male WHL were caught at the Hollow Tree site. A threshold of about 1200/trap would indicate a potential population level that might require intervention. If populations of WHL did rise to this level in Stanley Park, it is highly probable that the GVRD would also have populations irrupting in their watersheds. The Forest Health Unit (BC Ministry of Forests and Range) would be able to give advice on possible Btk spray options that could be approached collectively.

Possible Management Options:

1. It would be possible to carry out an annual survey for WHL at the same two sites we used this year. It would require purchasing 6 lures from Pherotech International and setting out three traps at each site at 50m to 100m spacing in the third week of August. These traps could be collected in early October and the average numbers of male WHL per trap calculated.
2. If the numbers are low, less than 400/trap, then no further action is required.
3. If the average number is greater than 400/trap then some consideration could be given to burlap trapping trees in the area the following summer to collect mature larvae/prepupae/pupae and having these reared to check for parasitism. UBC Forest Entomology could probably help out with a student project to do this. A high count in the fall trapping would trigger a proposal and give time for funding sources to be

identified. Other areas in the GVRD would probably come on board for this also as their populations would also be building (or they should at least check for it).

A check of parasitism levels would provide useful support data for planning any additional action, which might need, in the extreme, a possible localized spraying with Btk (most effectively done from the air – check with Ministry of Forests and Range and their Gypsy Moth program that also uses Btk aerial spray programs).

Footnote: Should an aerial spray be carried out, it would be very interesting from a conservation/biodiversity point of view to repeat the light trapping exercise of 2007 to determine how many of the 191 species we recorded may have been locally extirpated. To my knowledge, no-one has ever done such a repeat trapping exercise mainly because there wasn't time to carry out the baseline survey before the aerial spray was applied. It would make a very interesting Masters or even a Ph.D. level project given the great facilitation the Bar Code of Life is giving in making identifications (check with Lee Humble at the Pacific Forestry Centre).

Koot, H.P. 1994. Western Hemlock Looper. Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, Victoria, BC. Forest Pest Leaflet 21, Copublished by the BC Ministry of Forests.

Richmond, H.A. 1986. Forest Entomology: From pack horse to helicopter. Pest management Report Number 8. BC Ministry of Forests and Lands. 44 pp.

John McLean
November 5th, 2008

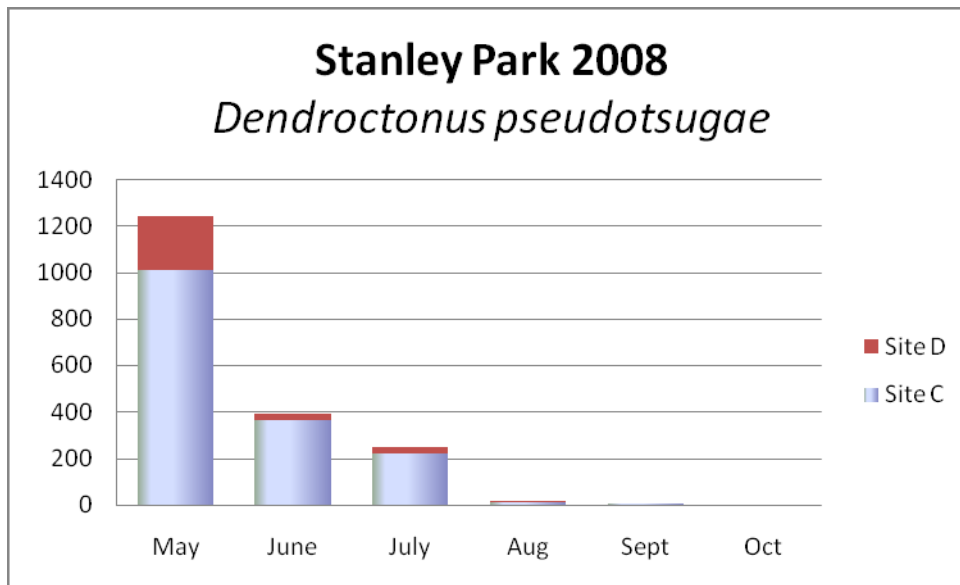
Management of Douglas-fir Beetle in Stanley Park

The data for 2008 shows that the major Douglas-fir beetle emergence occurs in the spring and early summer as is the normal case. The total catch in 2007 was 30 beetles in the undisturbed areas we trapped by the Aquarium and along Rawlings Trail near the Hollow Tree. The higher catch in 2008 was in the South Creek Trail area – see the data below.

Table 1 and Figure 1: Numbers of Douglas-fir beetle intercepted in pheromone-baited traps in Stanley Park 2008. Site C is South Creek Trail, Site D Merilees Trail.

Dendroctonus pseudotsugae - the Douglas-fir beetle

2008	May	June	July	Aug	Sept	Oct	Totals
Site C	1013	362	223	12	3	0	1613
Site D	230	29	28	2	0	0	289
Totals	1243	391	251	14	3	0	1902



During the summer, a close watch was kept on potential breeding material – stumps, wildlife trees and fallen logs. The activity of ambrosia beetles suggested that much of this material was prime for attack. Neither Tara nor ourselves (JM and AL) saw any bark beetle attacks (fresh brown frass on logs). Did our trap catch most of the beetles flying in the area? We will need to run the traps again next spring to track these numbers. Logs that I thought were prime for attack in the Aquarium site were not infested by bark beetles in 2008 although the ambrosia beetles attacked them in the fall. Will DFB attack these logs in the spring of 2009?

What about plans for the stands east of the Hollow Tree field to thin from below as proposed by Craig Farnden? He is aware that the large diameter material (both Douglas-fir and western hemlock) is potential bark beetle habitat. Smaller stems (<20 cm) are not usually successfully colonized by the Douglas-fir Beetle but they would be suitable for secondary bark beetles such as *Pseudohylesinus nebulosus*, *Scolytus tsugae* and *S. unispinosus*. In times of drought these secondary bark beetles can kill young trees. A program of gradual release without removal of the thinnings would set up a bark beetle nursery. Some innovative marketing to help offset the cost of removing thinnings would probably be prudent (or alternatively, carry out the thinning when there is a market for the smaller diameter materials).

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November 17th, 2008