



Insectary Notes

September / October 2011

From the Editor



We are in the midst of a very busy fall season. The overwintering surveys have begun. The results of the spruce budworm pheromone trap survey are in, see page 7.

In October, we were very fortunate to have Dr. Jean Bérubé visit Shubie and provide training and information on Armillaria Root Disease. Gina has written an article (page 2) on this tree disease.

This is the time of year to clean up leaves to lessen the damage from some foliar insects and disease in the coming spring. You can see some of the critters you may be able to avoid on pages 5 and 6.

'Til next time,

Jacqui

Editing . . . a Rewording Activity

Say What and Quotes

The wisdom of Bumper Stickers . . .

According to my calculations, the problem doesn't exist.

Confidence is the feeling you have before you understand the situation.

I Feel Like I'm Diagonally Parked In A Parallel Universe.

Relish Today . . . Ketchup Tomorrow.

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I think that I think, therefore I think that I am.

Back Up My Hard Drive? How Do I Put It In Reverse?

Very funny Scotty; now beam down my clothes.

Do not meddle in the affairs of dragons, for you are crunchy and taste good with ketchup.

(Editor's note: yes, the last 2 are repeats: they are my favorites.)

Provincial Forest Entomologist's Overview

..... What's the Buzz?

Gina Penny

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Armillaria Root Disease, Shoestring Root Rot

Early in October Forest Protection was pleased to welcome Dr. Jean Bérubé, forest pathologist with the Canadian Forest Service, Laurentian Forestry Centre to provide us with a seminar on and field survey of *Armillaria* species in Nova Scotia.

Armillaria root rot, also known as shoestring root rot, is caused by several species of the soil borne fungus *Armillaria*. It is typically a problem in older plants or plants that have been stressed due to drought, frost, insect attack, mechanical injuries, poor drainage, low soil fertility excessive shade, or

pollution damage. *Armillaria* root disease is worldwide in distribution and is found throughout the temperate and tropical regions of the world. Currently, the genus *Armillaria* is thought to contain more than 40 different species.



Hosts

Armillaria has an extremely broad host range. It can attack more than 600 species of mostly woody plants; hardwoods, softwoods and shrubs.



Disease Symptoms and Signs

The aboveground symptoms of *Armillaria* aren't very different from those produced by other root and trunk injury. The most noticeable external symptoms are early autumn colour and leaf drop, stunted growth, yellowing or browning of the foliage, a general decline in plant vigor, and twig, branch, and main stem dieback. As decline progresses, decay of the buttress roots and the lower trunk is evident. Small plants die quickly after the first symptoms appear with large trees surviving for a number of years. Conifers frequently produce a larger-than-normal cone crop (stress cones), shortly before they die. Severely infected trees may also exude large amounts of resin from the lower trunk.

Diagnostic signs of *Armillaria* root rot include:

1. Mycelial Fans: Mycelial fans are nearly always present in infected and recently killed trees. They are white, fan shaped mats of mycelium (fungal fibers) that develop between the bark and the wood of an infected host. They can be observed when the outer bark is carefully peeled away. Mycelial fans may also be found beneath the bark of infected roots and root collar area.

2. Rhizomorphs: Rhizomorphs, black shoestring-like structures, 1-5 mm in diameter can be found between the bark and the wood, on bark surfaces below the soil line, and in the litter and soil around the roots and root crown. Rhizomorphs grow through the soil from infected trees, roots, or old stumps. As they grow through the soil, they branch and penetrate roots, causing new infections. Rhizomorphs, in addition to direct root contact, are the principal means of tree-to-tree spread.



Fig. 1 *Armillaria rhizomorphs*, Oct. 2011.

3. Mushrooms: In the fall, the reproductive stage of *Armillaria*, also known as honey mushrooms, can be found growing in clusters near the base of infected hosts. Generally, the mushrooms have yellow or brown stalks about 5 cm long. A ring is sometimes found around the stalk just below the gills. The caps are honey-yellow in colour and approximately 5 - 12.5 cm across. The cap may be slightly sticky and dotted with dark brown scales; underneath, the cap has whitish gills.



Fig. 2 Honey mushrooms, Oct. 2011.

Management Prescriptions

Since these fungi are native to many areas and live on a wide variety of plants and woody material, their eradication or complete exclusion is not feasible; management should be directed toward limiting disease buildup or reducing its impact (e.g., inoculum reduction through mechanical stump removal, use good planting practices to avoid deformed roots).

References

Pataky, N.R. 2000. *Armillaria Root Rot of Trees and Shrubs*. University of Illinois Extension Report on Plant Disease No. 602. http://web.aces.uiuc.edu/vista/pdf_pubs/602.pdf

North Carolina State University Plant Disease and Insect Clinic. 2011. *Armillaria Root Rot in the Landscape: Attack of the "Humongous Fungus."*

<http://ncsupdicblog.blogspot.com/2011/08/armillaria-root-rot-in-landscape-attack.html>

Williams, R.E., C.G. Shaw, III, P.M. Wargo, and W.H. Sites. 1989. *Armillaria Root Disease*. Forest Insect and Disease Leaflet 78 U.S. Department of Agriculture Forest Service.

<http://na.fs.fed.us/spfo/pubs/fidls/armillaria/armillaria.htm>

Bits and Pieces

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Forest Health Personnel

Jim Rudderham

We welcome Andrew Young and Matthew Campbell back with us again for the fall and winter. It's hard to believe how time flies. This is their fifth season with us. This is one of our busiest times of the year and Andy and Matt take a lead part in the fall collections and lab work. It would be very difficult to complete our surveys without them.

We are also pleased to announce that Matthew O'Connor has joined Forest Health as one of our full time Forest Health Specialists. He fills one of the vacancies we had in the section. Matthew came to us from the Oxford office where he was our pest detection officer. He originally comes from Guysborough. We welcome Matthew to the section and look forward to his new ideas and enthusiasm for our work.

Maple Trumpet Skeletonizer *Epinotia aceriella* (Clemens)

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Jacqui Gordon

In the late summer, I noticed the leaves on the maple in my yard were folded and skeletonized. On closer examination, I found evidence of the maple trumpet skeletonizer. The larvae of this little beastie feed primarily on sugar and red maple, but will sometimes munch on hawthorn and beech.

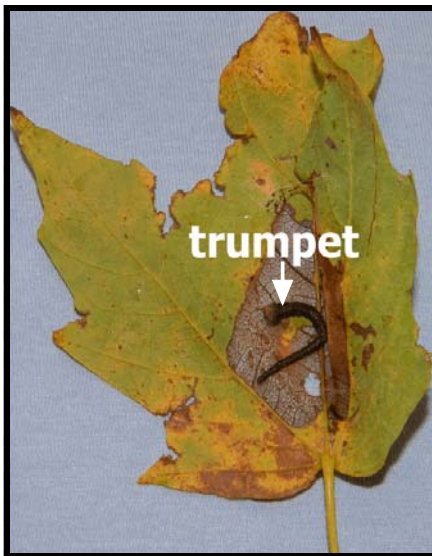


Fig. 3 Damage from maple trumpet skeletonizer feeding. "Trumpet" remaining after larva has dropped to pupate, Oct. 2011.

From early July through early October, the larvae feed between two major veins on the undersurface of leaves within the trumpet-like tube that they construct from silk and frass (feces). The "trumpet" provides a hiding and resting place for the larva and is expanded as the larva grows. Fully-grown larvae drop to the ground and form cocoons from pieces of leaves. Pupation takes place within the cocoon and they overwinter as pupae.

Since the damage occurs near the end of the growing season, it usually does no lasting harm to the tree. Raking and removing the leaves can help to lessen damage in the following year. If you suspect this insect, look for trumpet-like tubes on the undersides of the leaves. A leaf may appear to have a pleat, where it has been folded back on itself to contain the "trumpet."

Reference

ForestPests.org. Bugwood Network. Maple Trumpet Skeletonizer.

<http://www.forestpests.org/vermont/mapletrumpetskeletonizer.html>

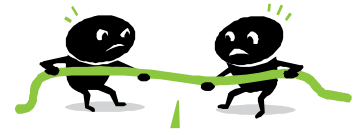
Joint Extension Workshop

Jeff Ogden

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Last newsletter, I spoke for the need of extension work as part of Forest Health's role in educating the public on the pests and diseases of NS forest. This month myself and Jacqui attended the annual Joint DNR Extension Workshop in Antigonish where the importance of outreach and education were showcased/emphasized. Topics included hunter safety, adult education techniques, programming

and at least one entertaining presentation on pests of concern to Christmas tree growers. The workshop also included field trips to a nursery, a woodlot and one of the three remaining provincial fish hatcheries as well as a spirited round of DNR Highland Games.



For myself, the most valuable takeaway messages from the three days of meetings were the importance of interdepartmental communication and the emphasis being placed on outreach in our new DNR Strategy. With the changes to the department's Christmas tree program, it is now, more than ever, critical to have regular communication between me and the district Christmas Tree Contacts. Maintaining and fostering this line of communication enables Forest Health to have a better understanding what is happening in each district of the province and helps us provide a better service to the Christmas Tree industry as a whole. As for extension work and the role it will play in the new strategy that is yet to be told. From the discussions at the workshop it sounds promising but only time will tell.



I personally would like to thank the organizers for the invitation to speak as well as attend and to say that to date it was the best of these events I have attended.

Hickory tussock, *Lophocampa caryae*

Jeff Ogden

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The cry of poisonous caterpillars throughout the media last month not surprisingly caught my attention. The particular caterpillar the media was warning against was the Hickory tussock, *Lophocampa caryae*, however many hairy caterpillars such as Whitemarked tussock, spotted tussock, Dagger moths and even some butterfly species can also cause similar irritation if one is sensitive.



In North America the hickory tussock is found mainly in southern Canada and north eastern US. In Nova Scotia, it is not a common species and has been recorded from primarily the southwest region of the province. It feeds on a variety of hardwoods including ash, elm, oak and willow. The larvae are predominately white with larger black tufts. Despite being attractive caterpillars, they should likely be avoided since the hairs can cause an itchy rash in those people who are sensitive to them.

Fig. 4 Hickory tussock larvae, Oct. 2011.

Fall Clean Up

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compiled by Jacqui Gordon

Tar spot of maple and leaf blotch of horse chestnut are two foliar diseases common in most of Nova Scotia. Both are fungal diseases that rarely cause long term damage to established trees but the discolouration of the leaves makes the trees unsightly. These tree diseases flourish in wet weather.

Tar Spot of Maple



Fig. 5 Large tar spot of maple.

Hosts

Red, silver, Norway, sugar, and Manitoba maples.

Causal Agent and Symptoms

Two species of *Rhytisma* fungi. These fungi infect the upper surface of leaves, each producing different symptoms. The first species, *Rhytisma acerinum*, causes shiny, raised black spots, approximately 0.5 - 2 cm in diameter, surrounded by a yellow halo whereas *Rhytisma punctatum* produces smaller spots, about 1 mm in diameter, sometimes referred to as speckled tar spots. Leaf tissue beneath a large tar spot turns brown while the tissue below speckled tar spots remains yellow.

Life Cycles

In the spring, fungal spores infect the young leaves. Although symptoms are evident throughout the summer, they are most obvious in August. The fungus overwinters in the fallen leaves.

Control Options for Tar Spot and Leaf Blotch

The best control option for tar spot and leaf blotch is to prevent infection. Since the fungus overwinters in the fallen leaves, rake up and destroy them in the fall. There will be less fungus around to infect the new leaves in the spring. Although this will not provide complete control, it will reduce infection.

References

Attwater, W.A. 2003. Tar Spot of Maple. University of Guelph. Pest Diagnostic Clinic.

<http://www.uoguelph.ca/pdc/Factsheets/Diseases/TarspotMaple.htm>

Sabourin, M., Dykstra, M.D. 2003. Pests & Diseases of Horse Chestnut. University of Guelph. Pest Diagnostic Clinic.

<http://www.uoguelph.ca/pdc/Factsheets/Diseases/HorsechestnutPestDiseases.html>

Leaf Blotch of Horse Chestnut



Fig. 6 Leaf blotch of horse chestnut.

Host

Horse chestnut.

Causal Agent and Symptoms

Leaf blotch is caused by the fungus, *Guignardia aesculi*. It causes reddish-brown blotches on the leaves, usually with a yellow border. The blotches appear on the leaflets and leaf stalks by mid summer. Infected leaves turn brown and may fall early.



Project Updates

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Spruce Budworm Pheromone Trap Survey

Jim Rudderham

All of the spruce budworm pheromone traps have been collected for 2011. Thank-you to all the PDO's who took part and helped out. This year there were 53 positive traps out of 150. This is down from a high of 85 positive traps that we had last year. This is the first drop of positive catches in three years. We will continue to monitor and report the results.

We will be collecting branch samples at each positive trap location to wash for overwintering larvae known as L2's. Results for the washes will follow. We have not seen spruce budworm larvae in the washes since 1994. Maybe this year.

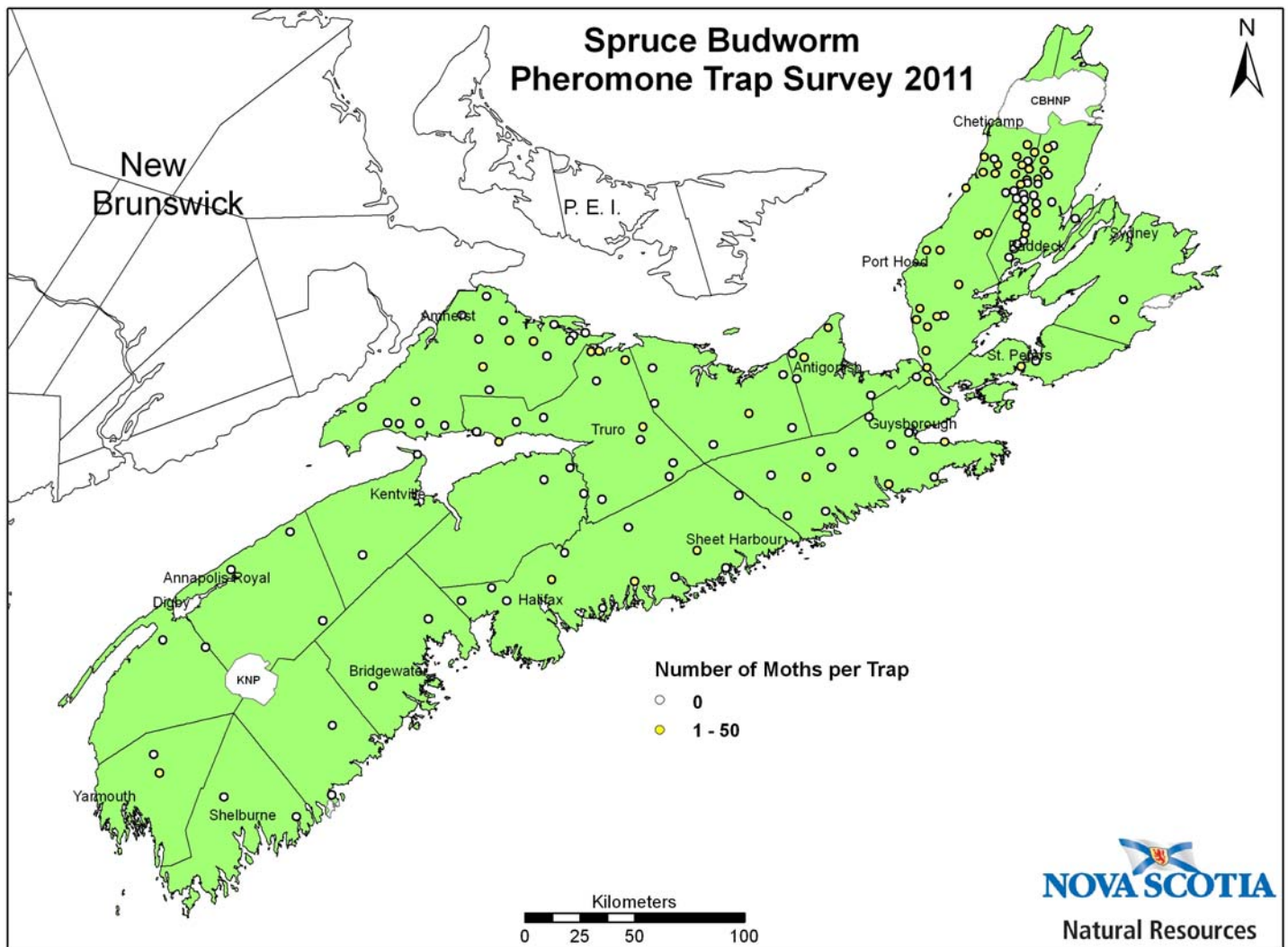


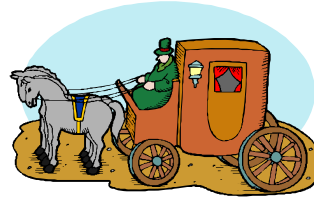
Fig. 7 Spruce budworm pheromone traps catches, 2011.

The Last Laugh . . .

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Sign behind a horse drawn carriage:

Energy efficient vehicle.
Runs on grass and oats.
CAUTION: Avoid exhaust!



The Magician and the Parrot



A magician was working on a cruise ship in the Caribbean. The audience would be different each week, so the magician allowed himself to do the same tricks over and over again.

There was only one problem: The captain's parrot saw the shows every week and began to understand what the magician did in every trick. Once he understood that, he started shouting in the middle of the show.

"Look, it's not the same hat!" "Look, he's hiding the flowers under the table!" "Hey, why are all the cards the Ace of Spades?"

The magician was furious but couldn't do anything, it was the captain's parrot after all. One day the ship had an accident and sank. The magician found himself on a piece of wood, in the middle of the ocean, and of course the parrot was by his side.

They stared at each other with hate, but did not utter a word. This went on for several days.

After a week the parrot finally said, "Okay, I give up. What'd you do with the boat?"



My mom has a lead foot, so I was not surprised when a highway patrolman pulled us over as we were driving along the freeway. Hoping to get off with a warning, Mom tried to appear shocked when he walked up to the car.



"I have never been stopped like this before," she said to the officer.

"What do they usually do, ma'am," he asked, "shoot the tires out?"

A pious man, who had reached the age of 105, suddenly stopped going to synagogue. Alarmed by the old fellow's absence after so many years of faithful attendance, the Rabbi went to see him. He found him in excellent health, so the Rabbi asked, "How come after all these years we don't see you at services anymore?"

The old man lowered his voice. "I'll tell you, Rabbi," he whispered. "When I got to be 90, I expected God to take me any day. But then I got to be 95, then 100, then 105. So, I figured that God is very busy and must've forgotten about me, and I don't want to remind Him!"