

A New Pest of Pines and Norway Spruce on Long Island: Southern Pine Beetle

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Pitch pines killed by southern pine beetle at Connetquot State Park

In fall, 2014 I was notified many pitch pines were dead and dying in the woodlands at one of our parks in Suffolk County. From an earlier report at the site I had expected to see black turpentine beetle, a common pest here of pines and some other conifers that bores into the lower trunk of stressed or injured trees. I visited the site in early October with the regional Supervising Forester from the New York State Dept. of Environmental Conservation (NYS DEC) and a representative from Central Pine Barrens Joint Planning & Policy Commission. We found hundreds of trees affected and noted symptoms were not so typical of turpentine beetle, which attacks the lower 6' of the trunk resulting in 3/4" diameter or larger pitch masses. In this case we were seeing smaller, dime-sized masses, like popcorn, from the base of the tree to very high in the canopy. Furthermore, beneath the bark were winding galleries in the cambium and outer wood surface not characteristic of many kinds of bark beetles.

As we feared, the problem was due to southern pine beetle (SPB, *Dendroctonus frontalis*) a forest pest of native pines in the southeastern US and occasionally troublesome to landscape trees there. In recent years the beetle has expanded its range northwards and in 2010 was responsible for killing pines on 14,000 acres in southern NJ. Since its discovery on Long Island, in spring 2015 SPB was also found in Scots and red pines in CT, and in survey traps in CT, MA, RI and at Bear Mountain State Park in NY. Pines are the usual host - both our native pitch pine on Long Island and eastern white pines have been attacked and there is at least one report in Japanese black pine. Norway spruce appears to be a new host in NY and NJ - several landscape specimens have also been killed. There is also at least one report of hemlock being attacked in NJ. The insect overcomes tree defenses through mass attack, then breeds in inner bark and introduces fungi. We have little information on how pines vary in susceptibility, though apparently SPB in its native range appears to prefer some southern pine species over others.



Pitch tubes from southern pine beetle are small, about the diameter of a dime.

Since fall, 2014 SPB has been found in numerous areas around Long Island from eastern Nassau County to Napeague in Suffolk County through trapping, ground surveys, and confirmed reports of infestations. Some areas have extensive losses – e.g. it is estimated over 75% of pines at Connetquot State Park have been killed. There are concerns for fire risk, given an abundance of dead wood and the proximity to residential and other development, as well as for ecological impacts. In residential areas homeowners, arborists and other landscape maintenance professionals, park managers and others are also concerned about what the new pest means for valued landscape plants.

Southern pine beetle does best where pines are dense and stressed, such as in overstocked and drought-prone forest areas. However, where infestations are high even healthy trees may be successfully attacked and Dr. Matt Ayres, Professor of Biological Sciences at Dartmouth, reports, “SPB reproduce less well in trees that produce more resin, but they seem to be just as likely to be attacked and just as certain to die. So neither [tree] health nor defenses seem to influence the mortality risks of individual trees when SPB are abundant in the area.” Still, special attention should be paid to cultural conditions of pines, spruces and hemlock since there is some uncertainty how the insect will behave in open landscape environments and where SPB populations are low. Good cultural care includes providing irrigation appropriate for the tree and site as weather changes, making sure there is good drainage, avoiding or addressing compaction and damage from construction or traffic and root competition from nearby plantings. If you live in an area with natural or other stands of pines within a few miles, be observant and note whether they are showing signs of decline (yellowing off-color foliage, dieback) and infestation ($\leq 1/2$ ” dia. pitch tubes on trunks,

especially if extending over 8' above ground). Trees that have been dead for a year or more will not be breeding sites for southern pine beetle.



Left: SPB entering pitch tube. Right: SPB adult showing size (scale in mm, adults are about 1/8" long).

We can't yet predict where attacks will occur, how severe the problem will be in 2015 or coming years and whether landscape trees will require protection in any location. SPB populations naturally surge and fall in other areas and natural enemies such as the 'barkbeetle destroyer' (also known as the 'dubious checkered beetle'), *Thanasimus dubius*, help in regulation. Recent surveys show *T. dubius* is present on Long Island in large numbers in SPB-infested areas. As a southern pest, very cold conditions can kill beetles (one study showed about 50% mortality at 4°F). Spring trap surveys seem to confirm that our record-cold winter appears to have negatively impacted beetle populations, though at least some beetles have survived.

In landscapes, where valuable trees are near areas with active infestations and declining trees (yellowing foliage and numerous pitch tubes on trunks; dead trees with brown foliage will not be a source of beetles), some protection might be worth considering. Unfortunately there are no simple ways (like using insect traps, which are only for survey and don't eliminate the population) to protect trees. Bark sprays with insecticides containing the active ingredients bifenthrin or permethrin are used to prevent attack but do not control beetles already inside the tree. If there is an immediate threat the first application is made around late April before beetles become active in spring (beetles emerge around the time flowering dogwood blooms, generally early to mid-May on Long Island), wetting the trunk from the base to as high as possible. One application will provide weeks of protection, though it is unclear whether follow-up treatments will be needed. There are at least 3 or 4 generations on Long Island and beetles may be active into early fall. In forest areas control involves, among other things, felling trees near the 'front' of the infestation to slow and disrupt their natural dispersal. That has been carried out on select sites.



SPB galleries under bark of white pine. Many immature SPB (larvae) can be seen but most shown were killed by last winter's extreme cold.

Below is a list of products homeowners can purchase labeled for control of SPB. Users should also read labels and verify products are labeled for the intended use. These materials are highly toxic to fish and other aquatic life and other animals may be sensitive to them, so should not be used where exposure is a concern. A professional arborist can be called in for the job if necessary. Only one systemic insecticide, Tree-äge, shown to have some protective value and it may be the only alternative where bark application isn't practical or possible due to drift or other concerns. It is for trunk injection and only available to professional arborists licensed to apply pesticides in New York State. Although fairly expensive the treatment lasts two or three years. Protection with Tree-äge is not absolute, however; beetles may still attack injected trees. Although such attacks won't be successful and the beetles don't survive, they carry certain fungi into the small wounds they create. Numerous attacks introducing these fungi at many points may actually be sufficient to cause the tree to decline and die.

It seems southern pine beetle is here to stay and we'll need to learn to live with it. NYS DEC has a website to check for more information and updates, at <http://www.dec.ny.gov/animals/99331.html>. The page includes photos and links to factsheets with more information, as well as contact information where suspect infestations can be reported. An excellent video about SPB (*A Story About a Beetle*, 22 min.) by Milo Johnson can be found at <https://www.youtube.com/watch?v=c426FJru5I>. Homeowners suspecting SPB can have samples brought or sent to one of our Horticulture Diagnostic Labs in Suffolk County (<http://ccesuffolk.org/agriculture/horticulture-diagnostic-labs>). Pines and Norway spruces are subject to a variety of pest, disease and environmental problems and homeowners should not assume dying trees or

those with dead branches are necessarily affected by SPB. For example, turpentine beetle has been common around Suffolk County in the last two years with symptoms of attack sometimes mistaken for those of SPB. Consulting arborists can help with an on-site assessment of trees, growing conditions, update on the local situation, and determining need for protection.



Above are pitch tubes from black turpentine beetle (BTB). This native pest has been common around Long Island and sometimes mistaken for SPB but makes much larger pitch tubes confined to the lower 6' of tree trunks. Turpentine beetle levels have been high in recent years.

“Every effort has been made to provide correct, complete, and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide.”

6/2015

Photo at right: Checkered beetle, main predator of SPB (about 1/4") (Photo A. Raimondo, CCE Suffolk)



**Products registered in New York to control southern pine beetle ('pine beetles')
on pines for home garden use**

Product	EPA Reg. No.
<i>Active ingredient: Permethrin</i>	
Adams Plus Yard Spray	28293-271-270
Bio Spot Active Care Yard & Garden Spray	28293-271-89459
Bio Spot Yard & Garden Spray	28293-271-270
Bonide Borer-Miner Killer Concentrate	4-408
Eight Insect Control Vegetable, Fruit & Flower Concentrate	4-408
Green Light Conquest Insecticide Concentrate	85827-6
Green Thumb Concentrate Lawn & Garden Insect Control	4-408-85925
Martin's Vegetables Plus	53883-69
Master Nursery Mosquito & Gnat Barrier	6218-76
*Permadoc Concentrate	10088-110-11547
*Pet Balance Triple Guard Yard For Fleas, Ticks and Mosquitoes Yard Spray Concentrate	1021-1758-89609
Tractor Supply Co. Groundwork Concentrate Multi-Insect Killer ²	2217-902
Zodiac Yard & Garden Spray	28293-271-2724

Active ingredient: Bifenthrin

*Ferti-Lome Broad Spectrum Insecticide And Ferti-Lome Broad-Spectrum Insecticide
Ready-To-Spray 53883-228-7401
NOTE: this is not the 'Ready to Use' product (EPA # 53882-185-7401), which isn't labeled for use on pine to control southern pine beetle

Monterey Turf & Ornamental Insect Spray	228-459-54705
*Sentry Home Yard And Premise Spray Concentrate	53883-228-2517
*Home MD Maximum Defense Yard Spray Concentrate	53883-228-84742

Starred (*) products can also be used on spruce, hemlock and other conifers

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Cornell University
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and Extension Center**

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f. 631.727.3611

For persons seeking information, publications or soil tests to answer questions or solve problems with:

- Home vegetable and flower gardens
- Home landscape trees and shrubs
- Home lawns
- Houseplants
- Household and nuisance pests
- Soil pH or salts testing

Visit Cornell Cooperative Extension of Suffolk County. We have two locations:

East End Location

Cornell Cooperative Extension
423 Griffing Avenue, Riverhead, NY 11901
Monday through Friday - 8:30 am to 4:30 pm
Horticulture Information Line: 631-727-4126
Monday – Friday, 9 am - 12 noon

West End Location (April - November)

Bayard Cutting Arboretum
Montauk Highway, Great River, NY 11739
Thursday & Friday - 10 am to 4 pm
Horticulture Information Line: 631-581-4223
Thurs. & Fri. 8:45 am - 11:45 am & 1 pm to 4 pm

Insect and plant disease/problem samples for identification and/or problem diagnosis can also be mailed (East End location only) to or left at designated drop boxes at either location during non business hours. Ticks are identified at both locations. There is a \$10 charge per sample for tick and turf problem identification, \$7 for other plant problem and pest identifications. Make checks payable to *Cornell University Cooperative Extension - Suffolk County*. Visa and MasterCard card are also accepted (Riverhead location only). Samples are identified/diagnosed in the order received and diagnostic reports are mailed to your home. Due to the volume of samples received samples cannot be diagnosed while you wait – no exceptions please.

Soil samples for pH testing are \$5.00 per sample (\$3.50 for 5 or more) and are run once or twice a week. Reports are mailed to your home. For nutrient analysis, go to Dairy One's website at dairyone.com. You can order soil sample boxes from their website or call them directly at 1-800-344-2697 x 2179. Check our website at <http://ccesuffolk.org/gardening/> for publications, horticulture leaflets, directions and pricing for submitting soil, insect, and plant samples to our labs. Publications and leaflets on horticulture, pest and disease topics are also available at each office.

Nassau County residents can contact the CCE Nassau Horticulture Education Center & Demonstration Gardens at East Meadow Farms, 832 Merrick Avenue, East Meadow, NY 11554. Phone 516-565-5265 ext. 7 for hours and location of the Demonstration Gardens, Gardening Phone Hotline, walk-in diagnostics and soil pH testing. There is a \$5 charge for soil pH testing and \$7 charge for plant and insect diagnoses to non-members; there is no charge to those enrolled in the Horticulture Program, (\$25/year). Check the Cornell Cooperative Extension of Nassau County website at: http://www.ccenassau.org/hort/html/section_index.html

