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Blindsided: The Browntail Moth Caterpillar Takes the Midcoast by Surprise

"Lo, the year is in its prime; Summertime is itchy time." — Ogden Nash, "Man Bites Dog-Days"

by Marina Schauffler

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Kim Nicolet of Camden spent June trying not to scratch a rash that migrated around her body. She did internet searches and saw similar complaints on social media before realizing — after a week of research — that she had been exposed to the toxic hairs of the browntail moth caterpillar, a species spreading east and north from the Casco Bay region.

Nicolet doesn't recall seeing the caterpillars at all in 2017. Then this May, she said, they were everywhere — "in our boat, our yard, all over the driveway."

She eventually found creams to help cool the burning sensation, but it wasn't a pleasant start to the summer. Nicolet wonders why she had to learn about this health hazard the hard way. If alerted to the caterpillar outbreak in advance, she might have been able to remove its webs and minimize her exposure. It would help, she said, to "warn us that it's happening."

Browntail moth cocoon wrapped in common buckthorn leaves (Photo courtesy Maine Forest Service, DACF)

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Like Ivy Gone Airborne

"When the minutely barbed hairs of the caterpillar come in contact with the skin[,] they cause an eruption similar to and in many cases worse than ivy poisoning.... Direct contact with the insect themselves is not necessary... for when the caterpillars shed their skins, the molts are blown about[,] widely scattering the barbed hairs." – Edith Patch, "Brown-Tail Moth and Other Orchard Moths," Maine Agricultural Experiment Station Bulletin, November 1904

Browntail moth caterpillars molt up to five times between early April and July. Their hairs can go airborne each time and may remain toxic for up to three years, according

Preventing Exposure to Browntail Moth Hairs —

Educate yourself on the appearance of different caterpillars and webs (see graphic). Eradicate only browntail moth caterpillars; many others are critical for bird species to feed their young. Be careful raking or doing woods work in heavily infested areas. Exposure to the toxic hairs is lower on windless, damp days. Following any potential exposure, shower as soon as possible and wash clothes.

Dry laundry inside during June and July where infestations are heavy.

Be wary of the cocoons evident in July (see photo) as they are filled with toxic hairs. It is safer and more effective to remove winter webs.

to the Maine Forest Service (at the Department of Agriculture, Conservation and Forestry).

The stinging hairs hold double trouble, with barbs that cause physical irritation and toxins that induce a chemical reaction. They can cause respiratory problems but the primary complaint appears to be ivy-like rashes. “Pen Bay Medical Center is certainly seeing an increase in the number of rashes associated with browntail moth,” said its spokesperson, Jenifer Harris.

Exposure to the hairs is a particular concern for those who work outdoors routinely, but in heavily infected areas, everyone is at risk of exposure through inadvertent contact with the caterpillar, laundry hung outside, yard work or woods work.

Weather can aggravate exposure. “It’s an issue more this year because it’s been dry and windy,” said Patrice Carter, a pharmacist with Kennebec Pharmacy in Brunswick; “June is usually damper,” helping to keep the hairs from going airborne.

Those with repeated exposure can find their reactions growing more severe, Harris confirmed; “As with other hypersensitivity reactions, the allergic contact dermatitis from browntail moth caterpillar exposure can be more intense and more widespread with subsequent exposure.”

Between November and early April, remove the winter webs located at branch tips (not in branch crotches). Look for white silk tightly wrapped around one or more leaves with a thick white holdfast binding it to the twig. Clip webs and soak overnight in soapy water or burn them.

Check vehicles for caterpillars or cocoons so as not to transport the insect to an area that is not yet infested.

Treating Browntail Moth Rash —

Pen Bay Medical Center shared information on what its emergency department recommends to patients coping with browntail moth rash. Topical steroid creams can be used for localized rashes, whereas systemic antihistamines, anti-inflammatories and/or steroids may be needed if the rash is widespread. A number of pharmacies throughout the midcoast offer specialized browntail moth lotions.

PBMC notes that those suffering from the rash can formulate homemade remedies but should not use any on the face or groin. One includes equal parts betamethasone ointment or hydrocortisone ointment (steroid cream), diphenhydramine lotion (such as Benadryl) and menthol, applied twice daily. Another consists of Aspercreme, Sarna and calamine lotion applied two to three times daily. A third, to be applied as needed, includes equal parts diphenhydramine, lidocaine (4 or 5 percent), camphor/menthol and calamine.

A Persistent Pest

“They may … swing against the clothing of a person, or drop upon a passing car … and be carried long distances. Egg-laden moths may be attracted to the lights in trains and … cars and be borne into uninfested localities before they flutter off to deposit their eggs.” – Edith Patch, “Brown-Tail Moth and Other Orchard Moths,” Maine Agricultural Experiment Station Bulletin, November 1904

The first bad infestation of browntail moth caterpillar in Maine occurred in 1904. Edith Patch, an entomologist at the time with the Maine Agricultural Experiment Station in Orono, knew that Europeans had combated this pesky insect by legally requiring landowners to destroy the caterpillars’ winter nests. As the caterpillars began to spread within Maine, communities opted not for laws but for incentives: “We offered a bounty of one cent apiece for the Fall destruction, and 18,891 nests were destroyed,” noted the 1909 Annual Town Report of Bowdoinham.

Citizen efforts to curtail the browntail moth population got an assist in the 1920s from weather patterns and a fungus, *Entomophaga aulicae*. The remaining population of browntail moths was confined to a few Casco Bay islands and portions of Cape Cod until another outbreak occurred during the 1990s, primarily in towns around Casco Bay.

The moth’s population died back again around 2004 and 2005, aided by cool, wet springs, but some remained around Brunswick and their population has begun rebounding—spreading across more than 6,500 square miles of

the state. Morten Moesswilde, a district forester with Maine Forest Service, has watched the moth infest a growing number of communities in the four counties he serves: Lincoln, Knox, Kennebec and Waldo [www.maine.gov/dacf/mfs/forest_health/documents/browntail_moth_risk_map.pdf]. "Where we start to really notice the increase," he said, is in the survey done each winter of browntail moth caterpillar webs.

The Merrymeeting Bay area has an especially high concentration of browntail moth caterpillars, but Moesswilde said "it's no longer a question of 'an' epicenter. It has threaded its way through most corridors of the Midcoast and there are now a couple dozen known locations in Waldo County." The concentration of caterpillars is still highest in the Brunswick/Topsham area, though, and heavier in Lincoln County than in Knox and Waldo counties.

The caterpillars, which typically nest and feed in fruit trees, oak and birch, devour the mature leaves and then move on in subsequent seasons to new trees — typically leaving defoliated trees to recover. Unlike gypsy moth and winter moth, browntail moth tends not to be "a huge concern for the trees in the absence of other stressors," said Allison Kanoti, Maine Forest Service entomologist. However, trees in the midcoast do face another significant stressor — abnormally dry weather [www.drought.gov/drought/states/maine].

The course of this particular browntail moth outbreak is hard to project. Native insect species often follow more predictable cycles, Kanoti explained, but the trajectory of outbreaks and die-offs for invasives is difficult to gauge. "We've been in a period of expansion for some time," she said, and unfortunately "there's a lot of opportunity for spread."

Timeworn Solutions

"Cutting and burning the winter nests … is the most important of the direct remedies because it is the easiest, cheapest and, if thoroughly done, a sufficient protection against the ravages of this pest." – Edith Patch, "Browntail Moth and Other Orchard Moths," Maine Agricultural Experiment Station Bulletin, November 1904

Since Edith Patch wrote those words more than a century ago, a great deal in Maine has changed — but not the preferred management strategy for dealing with browntail moth. Removal of winter webs, Moesswilde emphasized, remains the easiest, most effective and least costly approach to control. Anyone can remove the webs — without risk of skin irritation — between November and early April (although use of gloves is still advisable). Online videos [www.pressherald.com/2017/06/04/protect-browntail-moth-exposure/] provide instruction on how to clip out the webs.

Clipping webs works well where pole pruners can reach, but taller trees can prove problematic. Maine Forest Service has compiled a list of arborists willing to cut out browntail moth webs [www.maine.gov/dacf/mfs/forest_health/documents/arborists_prune_btm_webs.pdf] but the cost can be prohibitive and not all trees are accessible.

Chemical control is expensive, non-selective (killing beneficial insects as well as the invasive caterpillars) and — in Moesswilde's view — "not particularly effectual." Some communities around Casco Bay have attempted aerial spraying but encountered numerous problems. It only works if applied in May, when weather can be uncooperative and licensed pesticide applicators tend to be overextended. Formulas that use insect growth regulators can threaten lobsters, so coastal applications are restricted. And insecticides that kill the caterpillars may still leave the urticating hairs on-site.

Efforts to control browntail moth that are both effective and environmentally benign have been stymied by insufficient research. Since the moth's current range is confined largely to Maine, federal agencies have little motivation to fund research. And, Kanoti admitted, few researchers want to handle this species — literally!

Eleanor Groden, an entomologist with the University of Maine, is tackling this challenge, with help from some unusual partners. This past March, Harpswell voters approved $10,000 to fund her research — which now incorporates study sites in their town. Groden hopes to identify controls involving parasitoids (predatory flies and wasps whose larvae can kill the host caterpillar) and organically certified "biorational" products (ones considered

relatively nontoxic to humans and not persistent in the environment).

Voters decided that "putting money there was very well-spent," noted Mary Ann Nahf, chair of Harpswell's Conservation Commission. Harpswell residents are diligent about removing webs, she said, and realize the ways that spraying is problematic. Once they had "good scientific information" about options for better management, she added, supporting the research "was not a tough sell."

Harpswell's Conservation Commission has created a page on the town's website with resources and links to help residents learn about the moth, relevant legislation and management strategies. In Bowdoinham, the town library took the lead in informing people about browntail moth, putting information in the town newsletter, creating an informative notebook, and even purchasing a pole pruner that residents could check out. "It fell to the library," said its director, Kate Cutko, "because no one else was doing it."

Both those communities drew extensively on information compiled by the Maine Forest Service, which has a comprehensive set of resources on its website. Cooperative Extension offices have also fielded countless calls about the caterpillar this summer and often refer people to the MFS website for guidance.

Itching to Know More

"... The fact that many people within the infested district do not know what to look for suggests the need for preparing the children of Maine to watch ... suspected areas for occurrence of this pest." – Edith Patch, "Brown-Tail Moth and Other Orchard Moths," Maine Agricultural Experiment Station Bulletin, November 1904

When asked about its work on this growing public health threat, the Maine Center for Disease Control and Prevention (at the Department of Health and Human Services) offered a surprising reply: "The majority of outreach and education is handled by the Maine Forest Service," DHHS spokesperson Emily Spencer wrote in an e-mail. (No Maine CDC staff person would answer questions directly, with two acknowledging "we're not allowed to speak to the media.")

On June 25, the Maine CDC did issue a browntail moth advisory to midcoast health providers, but at that point many area practitioners had been fielding calls and visits from rash sufferers for three to four weeks.

With an insect infestation widely acknowledged to cause more public health impacts than forest damage, why are state and local public health officials not engaged in coordinated prevention efforts?

A response should involve relevant state agencies and the appropriate Public Health District, a regional entity created to support designated "local health officers" in each municipality, explained Jennifer Gunderman-King, an epidemiologist on the board of Maine Public Health Association. "It really does take a collaborative approach with some leadership." Until the belated public health advisory arrived in late June, two local health officers said they had received no forewarning of the browntail moth outbreak. As one put it, "everyone is left to their own devices."

Medical staff at PBMC knew of no entity doing community education on browntail moth, Harris indicated, while affirming that "education is key to avoiding browntail moth rash." Spencer acknowledged that the Maine CDC has no funding specifically for browntail moth education or outreach. According to PBMC, the CDC has not given local health providers any tracking mechanism for reporting browntail moth symptoms — so there is no way to determine where public health threats are most severe.

Asked if Knox County Community Health Coalition was working on this issue, its director, Connie Putnam, replied, "Unfortunately we're not; I wish we were. Our funding has changed." The follow-up question was predictable and her reply came quickly:

"Who is tackling this public health challenge?"

"No one is."

To Learn More — *Maine Forest Service offers a browntail moth webpage with extensive background (including a citizen science survey form): www.maine.gov/dacf/mfs/forest_health/invasive_threats/browntail_moth_info.htm "Aliens and Body Snatchers" by Walter Beckwith in UMaine Today examines current research efforts on browntail moth in Maine: umainetoday.umaine.edu/stories/2018/aliens-body-snatchers/*