Browntail Moth Infestation in Mid-Coast Maine

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Background. The Browntail Moth (BTM, Euproctis chrysorrhoea) is an invasive pest from Europe that was first discovered in Massachusetts in 1897. It rapidly expanded its range by 1913 to include all the New England States, New Brunswick and Nova Scotia. Thereafter, its population gradually fell such that by the 1960s it was limited to parts of Cape Cod and a few islands in Casco Bay. This decrease was likely due to natural predators whose numbers increased in response to the increase in the BTM population. Recently, BTM's numbers and distribution have increased dramatically. Although, the reason for this increase is unclear, it most likely reflects a decrease in the predator(s) that controlled the BTM population throughout most of the 20th century. The ultimate control of the BTM population will depend on re-establishment of the normal ecological balance that existed until recently.

Life History. Like most herbivores (animals that eat plants), the BTM has a preference for certain species of plants. In our area, it has a strong preference for red oaks and apple and crabapple trees, although it can use other trees. The adult moths appear around the beginning of July, mate and lay eggs near the tips of branches. Often these eggs are laid at the tops of mature oak trees. The adults die soon thereafter. After an incubation period of up to a month, the eggs hatch, and tiny caterpillars begin feeding on leaves. After a month of feeding, the caterpillars are still quite small (about ¼ inch) and do little damage to trees. At that stage they form protective nests by folding one or more leaves together with silk and spend the winter in these nests. The nests are most visible as remaining dead leaves on the tips of tree branches that have shed the rest of their leaves. In early May the caterpillars come out of hibernation and begin feeding on new leaves until mid-June, when they can reach an inch or more in size. This is when they are most destructive and can defoliate a tree. Generally, a single defoliation will not kill a tree, although a tree that is already stressed can die. In mid-June the caterpillars form cocoons and metamorphose into adults.

Recognition of the Browntail Moth. The adult BTM is easily recognized as a white, "hairy" moth with reddish-brown antennae and tip to its abdomen. There are other white, hairy moths, but none of these have colored abdominal tips or antennae. The caterpillars can be recognized by the two red dots near their rear end and the parallel white markings along their sides, although these markings can be difficult to see on small caterpillars.

Environmental Harm.

- Defoliation. In general, BTM will not defoliate an entire tree, but this year appears to be an exception. This may be because oak trees leafed out around two weeks late this year, because of the cool spring, and there was less leaf mass at the time the caterpillars emerged. Healthy oak trees can survive a single defoliation event and will often grow new leaves the same season. To help individual trees, one can ensure they have adequate water (not a problem so far this year!) and fertilize the tree.

- Toxic Hairs. BTM caterpillars and adults have toxic hairs. The caterpillars shed the hairs continuously, but especially when they incorporate the hairs into their cocoons. The problem is worst here in June. The hairs can cause rashes, respiratory symptoms (asthma) and eye irritation in susceptible individuals. Windy days and lawn mowing can increase exposure, and rain helps drive the hairs into the ground. Keeping windows closed on windy days and avoiding air drying laundry may help. Wearing protective clothing and taking a cool shower after exposure can help prevent the rash. Over the counter medications such as calamine lotion, Benadryl and hydrocortisone cream may relieve itching. For prevention of respiratory and eye systems, a respiratory mask and goggles will help. The hairs remain toxic for up to 3 years.

Management of Browntail Moth Infestation. There are too many caterpillars in the woods to decrease the infestation by killing caterpillars. Of course, removing caterpillars around houses might decrease the exposure to the toxic hairs. Caterpillars should be killed by putting them in a container of soapy water and disposing of the water in a manner that will not increase exposure to the hairs.

Adult BTMs are highly attracted to lights, and infestations this year appear to be the worst in inhabited areas. Although it may not be effective now that the infestation is well-advanced, it makes sense to keep lights off at night, especially bright streetlights and security lights. The first BTM adults should appear around July 1 and be present for less than two weeks. Another approach is to leave a bright porch light on (turning off all other lights) and kill the moths that are attracted to the light. If so, this should be done nightly, starting now, and continuing until no more moths are around. The adult moths are best managed by vacuuming them into a wet/dry vacuum (e.g., “shop vac”) with a high-quality filter and soapy water at the bottom. A sturdy fly swatter also works.

In the late fall through spring, the overwintering nests are clearly visible on the tips of tree branches. If the tree is not large, these nests can be manually removed and placed in soapy water or burned. A list of arborists willing to prune nests can be found here. Unfortunately, the nests are often at the top of mature oak trees and are not easily reached. Since there are many affected oak trees in our forests, manually removing nests is useful for individual specimen trees, but will not affect the overall course of the infestation.

If a specimen tree has been defoliated this year and appears to be infested with new nests, trunk injection of an insecticide can be administered by an arborist licensed to do such work (see list here). These injections are best done in the spring, before the caterpillars emerge. Such injections can cost $200-300/tree and are effective for only one year in the case of the BTM. The downside of this approach is that it will kill any insect that feeds on that tree, and oaks are hosts to the greatest diversity of insects of any tree species in our area.

Aerial insecticide spraying is more harmful to the ecosystem and should absolutely be avoided. It is also illegal in Camden. The problem with aerial spraying is that it will kill all insects in an area, is difficult to control, and may prolong the BTM problem by killing those insects that prey on the BTM.

Ultimately, it is the natural enemies of the BTM that will solve the problem. The best that we can do is protect individual specimen trees and provide a diverse, healthy ecosystem for all insects.