

HAWTHORN MEALYBUG: *Phenacoccus dearnessi* (King) Order – Hemiptera/Homoptera; Family – Pseudococcidae

DISTRIBUTION - In 1950 *P. dearnessi* was reported in Arizona, California, Michigan, Texas, and in Ontario, Canada. In 1964 it was recorded in Wisconsin, and then in 1965 it was recorded in Illinois. By 1985 (Insects of Eastern Forests, Misc. Pub. 1426), it was also recorded in Indiana, Iowa, Kansas, Maryland, Missouri, New York, Ohio, and Pennsylvania.

DESCRIPTION - The adult female is red and is covered by a thin layer of white wax. The lateral filaments are short and inconspicuous, or absent. The ovisac may be absent or restricted to the posterior part of the venter. As the summer progresses, the female grows to a very large size which is very conspicuous on the branch tips of infested plants.

The male is smaller and is found in a white cocoon from late summer to early spring. In heavy infestations there are so many cocoons on the trunk and branches that the plant appears to be flocked. In early May the male emerges as a winged insect ready to mate.

HOSTS - This species is restricted to rosaceous hosts such as hawthorn, cotoneaster, mountain ash, serviceberry, quince, and *Prunus spp.*

Preferred hosts, include: *Crataegus prunifolia*, *C. crus-galli*, *C. punctata*, *C. mollis*, *Cotoneaster apiculata*, and *Cotoneaster preacox*.

DAMAGE - Plants infested appear very unsightly. The presence of the males gives an infested plant the appearance of being flocked, while the large females appear almost as "popcorn" on the small twigs and branches. As the females feed, they secrete honeydew which covers the plant. Sooty mold growing on the honeydew turns the plant black. The feeding of both sexes weakens infested plants, allowing them to be more susceptible to secondary insects and disease.

LIFE CYCLE - (northern Illinois) Both the males and females overwinter as second-instar nymphs.

Female - Females are lightly covered with a mealy secretion during the winter months. In mid-April, the females become active and molt. The third instar nymph is very mobile. They migrate from the trunk to the outer branches where they feed at the base of the leaf bud scales. They feed on the outer branches for a period of about seven to ten days during the last two weeks in April, and then there is a sharp decline in the numbers of females on the outer branches as they migrate back to the trunk. These females then molt into adults; almost immediately afterwards, they mate. After mating, the females migrate back to the outer branches (early May) and resume feeding. Once feeding begins, the females become robust and stationary. In mid-June, the females begin to lay eggs. Each female lays between 480 and 1,300 eggs. The light yellow egg hatches within 15-20 minutes after being laid. First instar nymphs appear to spend one or two days beneath the parent, before crawling onto the undersides of leaves to feed. Although large numbers of young are produced during the months of June, July, and early August, there appears to be a complete mortality of the young during these months. Young nymphs begin to survive in late August. It is these nymphs which overwinter.

These nymphs crawl from beneath the parent to the undersides of leaves and feed. The average duration of the first instar is 20 days. When the first instar nymph is about to molt, it crawls from the leaf and moves to a protected area near the leaf axil, or a roughened area on the branch. After molting, the second instar nymph crawls back to the underside of the leaf and resumes feeding. In late September, the second instar nymphs migrate from the leaves to the trunk of the tree.

Male - In mid April the second instar male molts within its cocoon. The cast skin is pushed to the exterior of the cocoon. The third instar nymph is more elongate and wing pads are evident. The duration of the third instar is less than nine days. By late April another molt takes place. This cast skin is also pushed to the exterior of the cocoon. The fourth instar nymph is slender with well developed wing pads. The duration of this instar is about two weeks. During the first week of May, the final molt into the adult stage takes place within the cocoon. Just before the adult

emerges, two pairs of long caudal filaments can be seen protruding from the cocoon. The adult male has fully developed wings and is capable of flight, but most males crawl over the bark surface in search of females. Males emerge over a short period of time in early May. The average life span is about five days. In late September, when second instar nymphs migrate to the trunk, male nymphs form cocoons in protected areas of the bark.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
[-----Males on bark in cocoon----][*] * Males emerge to mate [--- Females on bark ---][Feeding][**] ** Females on bark to mate <div style="text-align: center;"> [-----Females develop Eggs-----] [-----Fertilized Females on Buds-----] [-----Eggs hatch-----] </div> <div style="text-align: right; margin-right: 100px;"> [-Nymphs on Leaves][***][--Female Nymphs on Bark] *** Many nymphs on leaves </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> [--1st Control--] [-----] 2nd Control </div>											
Observed at: Northern Illinois						General Rule: +/- 1 week for each 60 miles change in Latitude					

INSPECTION TIPS - Fall and Winter: A white mealy residue is usually evident on the trunk and major branches of the infested plant. With your hands, remove pieces of the bark and examine the underneath areas with a hand lens. Small white male cocoons and female nymphs may be observed in the crevices. One must look very closely with a hand lens to be able to see the female nymphs because they are very small in size.

Early Spring: Male cocoons may be observed on the bark. Young female nymphs may also be found along the bark surfaces as they migrate from their overwintering sites to the bud tips to feed. A hand lens is necessary.

Late Spring: Females will be about 6 mm in size. They will be located on the branches near the buds. Some females may already be producing nymphs.

Summer: Large females should be very evident on the branches. Many nymphs may be located on the leaves. Old male cocoons will be present.

CONTROL TIPS - Control treatments may be very effective if applied during the spring when the young female nymphs are migrating from their overwintering sites to the bud tips. This is usually occurring when *Magnolia soulangiana* is dropping its petals. Once females begin to develop eggs, treatment results become incomplete. If the spring treatment timing is missed, it is best to wait until early October, just before the mealybugs begin to crawl to their overwintering sites. Treatments during the spring are much more effective than treatments during the fall.

Biological Control: Predators - Larvae of *Chilocorus stigma*, a ladybird beetle, are covered with flocculent secretions, resemble adult female mealybugs, and feed on first instar and second instar nymphs from July through September.

REFERENCES -

Anonymous. 1985. Insects of eastern forests. U.S. Dept. of Agric., Misc. Pub. 1426. 608 pp.

Appleby, J.E. Unpublished. Ecology of *Phenacoccus dearnessi*. Presented at the ESA National Convention.

PREPARED BY - Robert McAdams, Illinois. 1989.

REVISED BY - Robert McAdams, Illinois and William McAdams, Iowa. 1996.

PHOTOGRAPHS -



Adult females (Top) --- William McAdams, Iowa.



Male cocoons --- William McAdams, Iowa.

