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G96-1277 Pine Moths

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NebGuide

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Pine Moths

Pine moths can seriously damage pine trees. This NebGuide helps you recognize damage and symptoms, identify the pest, and choose a control.

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Pine moths are serious pests of pines in Nebraska. Larvae (caterpillars) damage trees by tunneling just beneath the bark of the trunk and branches (*Figure 1*), most commonly on the trunk just below a branch. The tunnels they make can girdle the trunk or branches or physically weaken them so they are easily broken by wind or snow (*Figure 2*). Heavily infested trees are often deformed and are sometimes killed.

Figure 1. Larva of *D. ponderosae* in its tunnel beneath a pitch mass.

One pine moth species, the Zimmerman pine moth, *Dioryctria zimmermani*, has been confirmed in Nebraska only in Douglas and Washington counties (*Figure 3*). A second species, *D. ponderosae*, has been identified only in Thomas, Brown, Holt, and Sheridan counties. A third species, *D. tumicolella*, is present in much of the central and western portions of the state.

Damage and Symptoms

The first sign of infestation by pine moths is the appearance of soft, pinkish pitch masses on the trunk or branches (*Figure 4*). These pitch masses, which form where larvae are feeding beneath the bark, may be found anywhere from the top to the bottom of the tree and commonly look like masses of bubble gum. After the larvae finish feeding, the pitch masses dry and become light yellow to cream colored, hard, and brittle. The pitch masses may remain on the tree for many years and may not be noticed unless the tree is examined closely.

Figure 2. Branch broken from the tree because of damage by pine

moths.

Infestations are often first noticed when branches begin dying or are broken off by wind or snow. When this occurs, a pitch mass is usually present at the base of the branch where it was attached to the trunk. The insects have a tendency to reinfest the same locations on individual trees, and as this occurs, a trunk or branch becomes more likely to be girdled or broken.

Ponderosa, Austrian, and Scotch pines are highly susceptible to pine moths. Jack and white pines can be infested, but are usually not seriously damaged. Pines from 5 to 15 feet tall are the most heavily infested and damaged. Smaller trees are less frequently attacked. Larger trees are often heavily infested, but they are not likely to be severely damaged.

Life Cycles and Species Identification

D. zimmermani and *D. tumicolella* are present as larvae in their tunnels from late April through most of July. Larvae reach a length of about 1 inch when mature. Adult moths begin emerging in mid- to late July, are most abundant in August, and may be present into September. *D. zimmermani* adults are mostly reddish brown with a prominent "W"-shaped white line near the middle of the forewing and have a wingspan of about 1 1/8 inches. *D. tumicolella* adults are mostly gray and black with a prominent "W"-shaped white line in the middle of the forewing and have a wingspan of about 1 inch. Eggs of both species are laid soon after adults emerge, and larvae begin appearing in mid-August. Young larvae feed for a short time on the bark before constructing a cocoon-like hibernaculum under a bark scale where they spend the winter. In early spring, generally mid-April, the larvae become active again and begin tunneling into the tree.

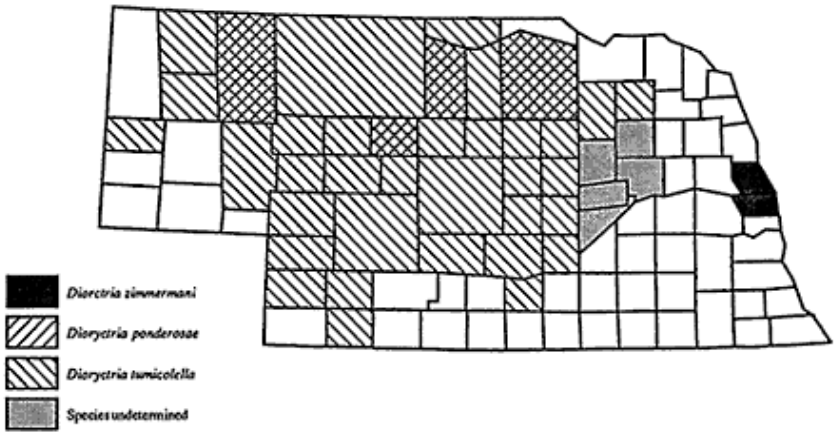

Figure 3. Known locations by county of pine moths in Nebraska.

Figure 4. Pitch masses formed by pine moths. Lower pinkish pitch mass was formed in the current year. Higher yellowish pitch mass was formed in a previous year.

The life cycle of *D. ponderosae* is notably different from the other two species. Adults are present mostly in June and July, but occasionally in August and early September. Eggs are laid over most of the summer, and young larvae immediately begin boring into the tree. The life cycle can vary in length from approximately one to two years. Because eggs are laid and young larvae appear over an extended period of the summer, and because the life cycle can take as long as two years, several ages of larvae can be found at any time. Larvae reach a length of about 7/8 inch when mature. Adults are similar in appearance to *D. tumicolella*, being mostly gray and black with a "W"-shaped white line across the middle of

the forewing and have a wingspan of about 7/8 inch.

Accurate identification of the pine moth species present is important because the timing of the control measures differs among the species. Since the infested areas of Douglas and Washington counties and those in the central region of the state are separated by some distance, pine moths found in or immediately around Douglas and Washington counties are most likely to be *D. zimmermani*. These larvae vary in color but are usually light greenish brown in the upper half of the body and light reddish brown to brownish pink in the lower half. They normally can be found in their tunnels only from late April through July.

In central and western Nebraska, the species present are most likely *D. tumicolella* and *D. ponderosae*. *D. tumicolella* larvae are brownish pink with six rows of small dark spots. They are present in their tunnels generally from late April through July. *D. ponderosae* larvae are creamy white to light brownish pink, normally do not have rows of noticeably darker spots, and can be found in their tunnels any time of the year. Often the easiest way to distinguish these two species is to examine an infested area in the fall or winter. At that time, *D. ponderosae* larvae will be present in their tunnels, but *D. tumicolella* larvae will not.

Control

Pine moths can usually be controlled with insecticides applied as trunk and branch sprays. Proper timing of the sprays depends on the species present. In areas where only *D. zimmermani* or *D. tumicolella* is present, one spray application of chlorpyrifos (Dursban 2E or 4E) or lindane during the second week of August, and one during the second week of April should give good control. (Dursban 2E or 4E must be applied only by commercial applicators. For pine moths, use at the rate for lilac borer indicated on the label.) If only one application is possible, the treatment in August is more effective. All spray treatments should be applied to the trunk and large branches in a way that the bark becomes thoroughly wet, including areas beneath bark scales and especially the trunk just beneath the branches.

Table I. Information about location, identification, and control of pine moths.

	D. zimmermani	***D. tumicolella***	***D. ponderosae***
Location in Nebraska	Omaha and vicinity	Generally north and west of a line from McCook to Grand Island to Norfolk	Known in Thomas, Brown, Holt, and Sheridan Counties
Color of larva	Light greenish brown upper body; light reddish brown to brownish pink lower body	Brownish pink with six rows of small dark spots	Creamy white to light brownish pink with no noticeably darker spots
Larvae present in trees in winter?	No	No	Yes
Adults present	Late July through early September	Late July through early September	Late May through early September
Timing of spray treatments*	Second week of August. Greater control if also second week of April.	Second week of August. Greater control if also second week of April.	Second week of June. Greater control if first week of June and first week of July.
Insecticides*	Chlorpyrifos, lindane,acephate, dimethoate	Chlorpyrifos, lindane,acephate, dimethoate	Chlorpyrifos, lindane,acephate, dimethoate
* See text for additional control options.			

For *D. ponderosae,* one trunk and branch spray of chlorpyrifos or lindane applied during the second week of June should provide adequate control. If greater control is desired, two sprays applied during the first week of June and the first week of July may be needed. These sprays should be applied in a thorough manner as described above for *D. zimmermani* and *D. tumicolella*. In areas where both *D. ponderosae* and *D. tumicolella* are present, applications of chlorpyrifos or lindane during the second week of June and the second week of August are needed to provide treatments for both species. A third spray during the second week of April may be needed for the most effective control.

Two or three applications of acephate (Orthene) or dimethoate (Cygon), beginning at the times recommended above and repeated at 10- to 14-day intervals during the following two to three weeks, can be substituted for the chlorpyrifos or lindane sprays for any of the species, but the level of control will be more variable. Systemic implants of acephate (Acecap 97) can be used instead of sprays, and if used should be applied in late April for all species. Careful attention needs to be given to the health of the tree when implants are used because significant damage to the trunk can occur if implants are used year after year. This damage may make the implants more suitable for use as an emergency treatment or on an occasional-use basis.

Because pine moths have a tendency to reinfest the same trees, the level of infestation in a plantation or windbreak can be reduced by cutting and destroying trees that become heavily infested. To control *D. tumicolella* and *D. zimmermani*, the cutting should take place after mid-September and before the end of June. For *D. ponderosae,* trees should be cut after mid-September and before the end of the first week of May. Cut trees should be destroyed by burning or burying. The final dates for destroying the trees are timed to precede the beginning of adult emergence by two to three weeks.

Larvae may be able to survive for many weeks in trees that are cut but not destroyed. If trees cannot be destroyed, they should be cut after mid-September and before the end of December to have the best chance of drying enough to kill the insects inside.

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