

Needleminers

Hollowed out needles

Name and Description—Pinyon needleminer—*Coleotechnites edulicola* Hodges and Stevens [Lepidoptera: Gelechiidae]

Ponderosa pine needleminer—*C. ponderosae* Hodges and Stevens

White fir needleminer—*Epinotia meritana* (Heinrich) [Lepidoptera: Tortricidae]

Spruce needleminers—*Endothenia albolineana* (Kearfott) [Lepidoptera: Tortricidae] and *Coleotechnites piceaella* (Kearfott)

Needleminers are tiny moth larvae that feed inside conifer needles. They are locally common on pinyon and ponderosa pine and are less commonly found on white fir and spruce. Adult moths are rarely noticed, but the hollowed out needles with tiny larvae or frass are distinctive (fig. 1). Larvae are particularly visible in ponderosa pine needles when held into the sunlight (fig. 2). Exit holes are also diagnostic on older hollowed out needles (fig. 3).

Hosts—Pinyon pine, ponderosa pine, white fir, and spruce are hosts to different species of needleminers in the Rocky Mountain Region. Lodgepole pine needleminers occur in California and Oregon but have not been reported in the Rocky Mountain Region.

Life Cycle—Pinyon needleminers lay eggs from early June through mid-July. Larvae emerge soon after eggs are laid and bore into uninfested needles where they feed until fall. They overwinter inside the needles as dormant larvae. Feeding resumes in the spring, and larvae grow to about 3/8 inch (5 mm) long. Pupation occurs in late May. Ponderosa pine needleminers lay eggs in late summer inside previously mined needles. The newly hatched larva bores into the tip of a green needle and mines slowly through the winter, developing more rapidly as the weather warms and pupating in midsummer. White fir needleminers have a similar life cycle but will mine about six needles before pupating in June or early July. White fir needleminers hatch in August and September and spend the winter within a needle. The two species of spruce needleminer that occur in the Rocky Mountain Region also overwinter as larvae. *E. albolineana* spends the winter protected in mats of webbing and dead needles attached to twigs (fig. 4). *Coleotechnites piceaella* spends the winter inside of mined needles. Both species resume feeding in early spring and complete their development by late spring. Eggs are laid in May and June.

Damage—Damage first becomes evident as foliage fades to yellow and brown. Early needle drop, reduced growth, and tree mortality can all result from needleminer infestations. The severity of the infestation can vary significantly from tree to tree, suggesting that individual trees have some resistance to these pests. Foliage thinning by needleminers can reduce tree vigor and increase susceptibility to bark beetle attack (fig. 5).



Figure 1. Ponderosa pine needleminer. Photo: Scott Tunnock, USDA Forest Service, Bugwood.org.



Figure 2. Ponderosa pine needleminer. Photo: Southwestern Region, USDA Forest Service.



Figure 3. Pinyon needleminer-damaged needles. Photo: Robert Cain, USDA Forest Service.

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Figure 4. Webbed needles from spruce needleminer. Photo: Whitney Cranshaw, Colorado State University, Bugwood.org.



Figure 5. White fir needleminer damage. Photo: Intermountain Region, Ogden Archive, USDA Forest Service, Bugwood.org.

Management—Trees usually recover from needleminer damage without suffering serious injury. Properly timed insecticide applications have effectively controlled populations on landscape trees. *Endothenia albolineana* overwintering nests can be removed from infested spruce with a strong stream of water from a garden hose in early spring before bud flush.

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1. Cain, R.; Parker, D. 1998. Conifer pests in New Mexico, Rev. Albuquerque, NM: U.S. Department of Agriculture, Forest Service, Southwestern Region. 50 p.
 2. Cranshaw, W.S.; Leatherman, D.A.; Jacobi, W.R.; Mannix L. 2000. Insects and diseases of woody plants of the central Rockies. Bulletin 506A. Fort Collins, CO: Colorado State University, Cooperative Extension. 284 p.
 3. Furniss, R.L.; Carolin, V.M. 1977. Western forest insects. Misc. Publ. 1339. Washington, DC: U.S. Department of Agriculture, Forest Service. 654 p.