

Pine Reproduction Weevils, *Hylobius pales* (Herbst) & *Pachylobius picivorus* (Germar) (Coleoptera: Curculionidae) ¹

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INTRODUCTION: The pales weevil, *Hylobius pales* (Herbst), and the pitch-eating weevil, *Pachylobius picivorus* (Germar), are common pests of young pines growing on recently cutover pine lands and Christmas tree plantations (Lynch 1984, Nord et al. 1982). They are infrequent to occasional pests of seed orchard trees (Dixon 1983), young pines growing in forest tree nurseries, and pines adjacent to wood-processing mills. Losses may range as high as 40% twig mortality in Christmas tree plantations (Nord et al. 1984), 60% seedling mortality due to *P. picivorus* alone in pine plantations (Thatcher 1960), and 90% seedling mortality due to *H. pales* alone (Nord et al. 1984). Adult feeding damage to young pines often varies along a gradient, i.e., those seedlings nearest disturbed trees, stumps, or slash material sustain the most damage while seedlings 100-200 feet away are usually lightly damaged. However, weevil feeding damage sometimes extends to seedlings or young trees up to 0.5 mile away. Generally, both species are present although their population ratios will vary depending on geographic location and season (Nord et al. 1984).

DESCRIPTION: *H. pales* - adults dark reddish-brown with scattered tufts of fine, long, yellowish-white or gray hairs on elytra and thorax; 2 oblique cross hair bars beyond middle of elytra; male ca. 5.8-11.3 mm long, female ca. 7.4-10.3 mm long. Beak robust, cylindrical, feebly curved. Thorax much like *P. picivorus*, somewhat shorter and more depressed; tibiae of usual form, not dilated (Fig. 1). *P. picivorus* - adults dark brown, with patches of short, flattened, white, yellowish or reddish-brown hairs on elytra; length 7.9-11.1 mm, similar to *H. pales*. Tibiae short and thick, dilated outer apical angles (Fig. 2) (Anderson 1960, Blatchley and Leng 1916, Nord et al. 1984, Warner 1966). Egg ca. 1.25 mm long; pearly white (Davis and Lund 1966). Mature larva ca. 12 mm long; body cylindrical, elongate, whitish, somewhat curved in long axis; head capsule orange to reddish-brown; legless. Pupa same size as adult; color creamy-white (Anderson 1960, Nord et al. 1984).

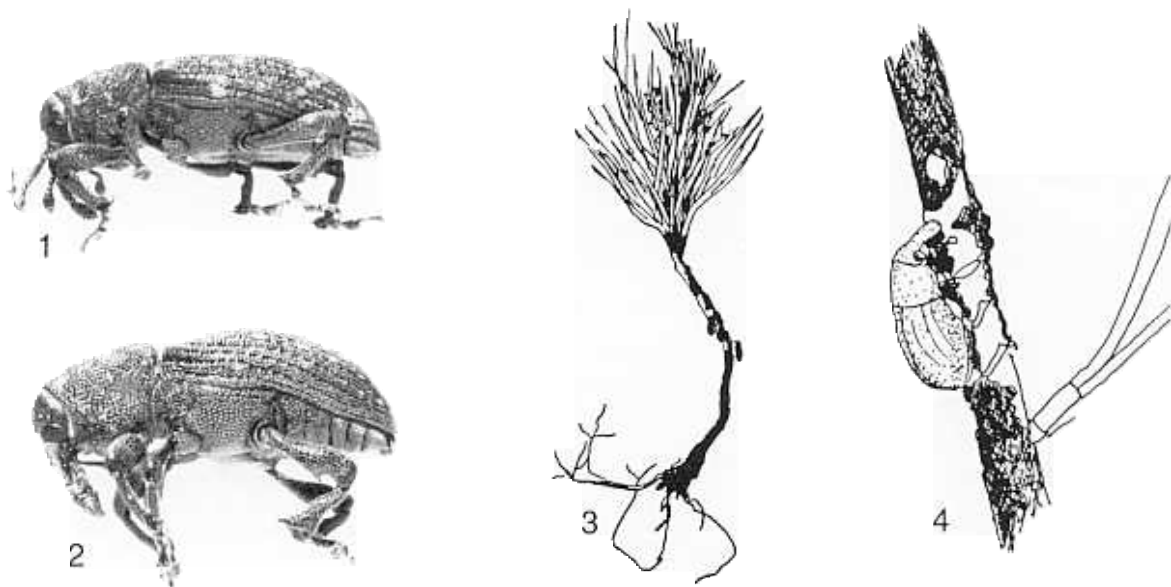


Fig. 1-4. 1) Adult pales weevil, *Hylobius pales* (Herbst); 2) Adult pitch-eating weevil, *Pachylobius picivorus* (Germar); 3) Debarking damage and two pine reproduction weevils on pine seedling; 4) Closeup of adult pine reproduction weevil feeding on bark of pine seedling stem. Photographs: J. Windsor (DPI Neg. # 702444-5, 702444-4).

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DISTRIBUTION: *H. pales* distributed in most of the eastern half of United States (AL, AR, CT, DC, FL, GA, IL, IN, LA, MA, MD, ME, MI, MN, MO, MS, NC, NH, NJ, NY, OH, OK, PA, RI, SC, TX, VA, VT, WI, WV), Puerto Rico, and Canada (Nova Scotia, Ontario, Quebec); *P. picivorus* similarly distributed in United States (AL, AR, DC, FL, GA, IN, KY, LA, MI, MS, NC, NJ, NY, SC, TX, WI) and Canada (Labrador, Ontario) (O'Brien and Wibmer 1982, Lynch 1984, Hunt and Raffa 1989).

HOST PLANTS: *H. pales* has an extensive host list, including: *Pinus strobus* L., *P. rigida* Miller, *P. ponderosa* Laws, *P. mugo* Turra, *P. cembroides* Zuccarini, *P. sylvestris* L., *P. resinosa* Aiton, *P. elliottii* Engelm., *P. taeda* L., *P. echinata* Miller, *P. palustris* Miller, *P. nigra* Arn., *P. banksiana* Lambert, *P. virginiana* Miller, *P. rigida* Miller, *P. serotina* Michaux, *P. strobiformis* Engelm., *Larix laricina* (Dur Roi) Koch, *L. decidua* Miller, *Abies balsamea* (L.) Miller, *Picea rubens* Sargent, *P. abies* (L.), *P. pungens* Engelm., *Tsuga canadensis* L., *Pseudotsuga menziesii* (Mirbel) Franco, *Juniperus virginiana* L., *J. communis* L., *J. silicicola* (Small) L. H. Bailey, *Cupressus arizonica* Greene, and *Thuja occidentalis* (L.) Carriere. *P. pachylobius*, although likely to have a similar host list, has been documented only for *P. taeda*, *P. echinata*, *P. clausa* (Chapm.) Vasey, *P. elliottii*, and *Juniperus silicicola* (Warner 1966, Thatcher 1960, Dixon et al., unpublished data).

BIOLOGY: The two species are similar in life cycle and behavior. Adult weevils respond to odors associated with recently cut or disturbed pines (Peirson 1937, Thomas and Hertel 1969) (e.g., selective cuttings in Christmas trees, fire, storm damage, bark beetles, road construction). Nocturnal feeding by adults occurs on inner bark of trees, stumps, and later, small twigs of residual pines or stems of young pines. Small to large irregular patches of bark are removed by adult feeding; debarking may occur additionally or exclusively below groundline (Figs. 3-4). Adults move to leaf litter during daylight hours. Eggs are laid in niches or small pockets in the bark of root collars and roots. Larvae tunnel along the roots, feeding on phloem and xylem tissues. After five or six larval instars, pupation occurs in cells (chip cocoons; ca. 6 mm deep X 13 mm long) constructed in the outer wood surface (sapwood) or bark of roots. In the South, adult weevils are present year-round and there may be two or more generations per year, depending on local temperatures and weevil activity. In comparison, there is one generation per year in northern latitudes and adults may overwinter two years (Franklin and Taylor 1970, Lynch 1984, Nord et al. 1982, Peirson 1937, Thatcher 1960).

SURVEY AND DETECTION: Dying seedlings and dead branches often are the first evidence of pine reproduction weevil problems. Close examination of seedlings shows partial to complete debarking of stems and/or roots while saplings and larger trees have branch debarking and bud feeding. Margins of the feeding damage may have a sugary appearance due to white, crystallized resin. Girdled seedlings display little or no resinosis (Nord et al. 1984). Pine reproduction weevils are rarely observed owing to the adult's habit of hiding in the leaf litter during the day. Insect presence is generally confirmed using traps baited with whole bolts, split bolts, or radial discs cut from fresh pine (Lynch 1984).

CONTROL: Damaging weevil populations in pine nurseries and Christmas tree plantations can be minimized by not cutting nearby pines. If a harvest cut is necessary, conduct in coolest months to minimize numbers of adult weevils. On forest lands, delaying pine reforestation until at least one year after harvesting is a cultural method of avoiding weevil damage. Chemical control at the time of planting is recommended where winter reforestation occurs within 6 to 8 months of harvest or site preparation. Consult your local county agricultural extension office for current insecticide recommendations.

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