LACINIPOLIA PATALIS GROTE (LEPIDOPTERA: NOCTUIDAE) INFESTING DOUGLAS-FIR CONES: A NEW HOST RECORD[1]

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Larvae of *Lacinipolia patalis* (Grote) (Lepidoptera: Noctuidae) were discovered in Douglas-fir (*Pseudotsuga menziesii* [Mirb.] Franco) cones collected from the Louisiana-Pacific Corporation's Little River Seed Orchard near Trinidad Head in Humboldt County, CA (elevation 91 m) during the fall of 1985. Previous surveys have not reported this noctuid from Douglas-fir cones (Keen 1958; Tietz 1972; Furniss and Carolin 1977; Hedlin *et al.* 1980; Ruth 1980; Schowalter *et al.* 1985). Its usual hosts are blackberry and loganberry (*Rubus* spp.) and roses (*Rosa* spp.); it normally feeds on foliage and, to some extent, dead fruit bases and dead leaves (Crumb 1956). The shift from angiosperm leaves and fruit to gymnosperm cones is somewhat surprising. Blackberries, however, grow around the perimeter of the seed orchard and along the rows between trees, and so provide an abundance of the usual host for *L. patalis* nearby.

Douglas-fir cones were harvested in early September and dissected scale-by-scale to investigate patterns of resource use by Douglas-fir cone-feeding insects. Larvae were discovered in frass-filled axial mines. Damage to seeds, bracts, and scales was similar to that caused by *Dioryctria abietivorella* (Grote) (Lepidoptera: Pyralidae), which consumes entire seeds and chews round holes in seeds, scales, and bracts, destroying a cylinder of tissue surrounding the rachis of the cone (Hedlin *et al.* 1980). No evidence of this latter species was found in mines occupied by the noctuid larvae, although *D. abietivorella* larvae were found in other cones from the orchard during the same season. There was no resin accumulation such as characterizes feeding by *Barbara colfaxiana* (Kearfott) (Lepidoptera: Tortricidae) (Hedlin *et al.* 1980).

Larvae were extracted from the cones and reared in plastic snapcover Petri dishes on an artificial diet developed for the western spruce budworm (*Choristoneura occidentalis* Freeman [Lepidoptera: Tortricidae]) (Lyon *et al.* 1972), which also feeds on developing Douglas-fir cones. Most of the larvae succumbed to an apparent viral infection, but two specimens pupated and one, a female, eclosed normally. This specimen was identified as *L. patalis* (Robert Poole, A.R.S., U.S. National Museum of Natural History, Washington, DC, personal communication). It has been retained as a voucher specimen in the Entomology Museum, University of California, Berkeley.

Although damage attributable to this species was quite low, it was nevertheless the second most abundant lepidopteran in the cones sampled, following *D. abietivorella* (Rappaport and Volney 1986). Surveys relying on damage symptoms alone may fail to reveal the presence of this species, because its feeding habits are similar to those of *D. abietivorella*. This is likely if cones are sampled after *D. abietivorella* larvae have emerged from the cones to pupate. Even when rearings are attempted, the apparent susceptibility of the larvae to viral infection may complicate identification of the specimens. *Lacinipolia patalis* larvae may be distinguished by the combination of pinkish-brown body color with two darker brown longitudinal bands on either side of the brown mid-dorsal line.

Lepidopteran larvae feeding on Douglas-fir cones typically concentrate along the central region of the cone axis (Kozak 1963; Volney 1984; Rappaport and Volney 1986) where sound seeds are most abundant. This species, however, concentrated its feeding in that region only when an insecticide treatment (acephate capsules containing 0.85 g AI implanted into the trees at the registered dosage of one capsule for every 10 cm of tree

[1]This article reports the results of research only. Mention of a proprietary product does not constitute an endorsement or a recommendation for its use by USDA.

diameter) had reduced feeding by other pest species (Rappaport and Volney 1986). This niche shift in the absence of competing species may indicate that the noctuid has the potential to become a primary pest if orchard managers succeed in controlling the major pests of Douglas-fir seed production.

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