

The Tarnished Plant Bug, *Lygus lineolaris* (Palisot de Beauvois) in Conifer Nurseries (Heteroptera: Miridae)¹

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INTRODUCTION: *Lygus lineolaris* (Palisot de Beauvois), the tarnished plant bug, attacks a wide variety of herbaceous plants, vegetable crops, commercial flower plants, fruit trees, and nursery stock (Kelton 1975). Less well known, but of increasing importance, is that *L. lineolaris* feeds on conifer seedlings. Coniferous nursery stock in British Columbia, Oregon, Florida, Mississippi, Arkansas, and Oklahoma has been damaged by *L. lineolaris* (Schowalter et al. 1986; Shrimpton 1985; South 1986). Approximately 50% of the loblolly pine seedlings in one southern forest nursery was damaged by *L. lineolaris* (South 1986). In early 1989, the risk of feeding damage by *L. lineolaris* prompted several Florida forest nurseries to initiate preventive insecticide applications. In one nursery, by late May 1989, non-treated plots of bare-root pine averaged 18.5 live pine seedlings/ft² of which 24% exhibited feeding damage by *L. lineolaris*, while in insecticide-treated plots a density of 24 live pine seedlings/ft² and 2% damage was observed. Pine seedlings in a nursery severely damaged by *L. lineolaris* usually do not survive the growing season.

DESCRIPTION: Adult male: length 4.90-5.95 mm, width 2.38-3.01 mm; female: length 5.25-5.95 mm, width 2.52-3.01 mm (Fig. 1). Head yellowish-brown, frons smooth with black submedian lines. Rostrum 2.17-2.52 mm long. Pronotum yellowish to reddish brown, anterior angles rounded. Mesoscutum black, lateral areas pale or reddish. Hemelytra reddish brown, pubescence moderately long and dense, yellowish. Summer adult color varies: pale yellow with few black markings to reddish brown, or almost completely black with few pale yellow markings (Kelton 1975, 1980).

DISTRIBUTION: *L. lineolaris* occurs in all Canadian provinces, the continental United States (excluding Hawaii), and most of the states of Mexico (Kelton 1975; Young 1986).

HOSTS: At least 385 host plants have been recorded for *L. lineolaris*. A majority of the hosts are in the subclasses Rosidae and Asteridae. Principle economic hosts are cotton, seed alfalfa, snap and lima beans, soybeans, apples, cherries, carrots, peaches, pears, strawberries, tomatoes, and nursery stock (Haseman 1918; Tingey and Pillemer

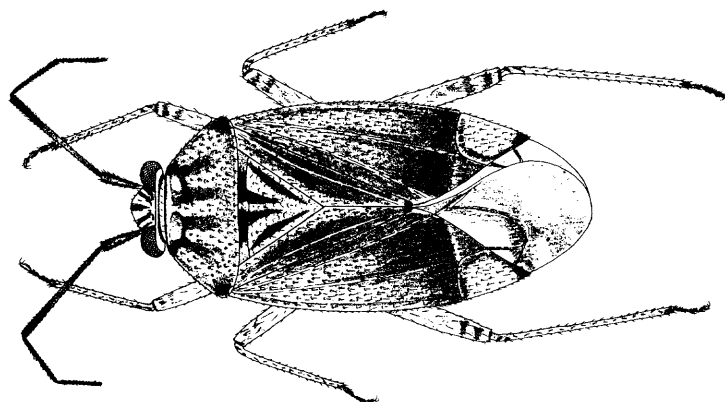


Figure 1-2. 1) Adult *Lygus lineolaris* (adapted from Kelton 1975); 2) Typical appearance of conifer seedling damaged by feeding of *L. lineolaris*.

¹ Contribution No. 710, Bureau of Entomology

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1977; Young 1986). Loblolly pine (*Pinus taeda* L.) (South 1986) and Choctawhatchee sand pine [*Pinus clausa* (Chapm.) Vasey var. *immuginata* Ward] seedlings in southern forest nurseries are severely damaged by *L. lineolaris* feeding. Elsewhere, *L. lineolaris* damages white spruce [*Picea glauca* (Moench) Voss], lodgepole pine (*Pinus contorta* Dougl.), Douglas-fir [*Pseudotsuga taxifolia* (Poir.) Britt.] (Shrimpton 1984), and larch (*Larix occidentalis* Nutt.) Sutherland et al. 1989.

LIFE HISTORY: Overwintering as adults, *L. lineolaris* can be found in dead weeds, leaf litter, under tree bark, and in rock piles in fields, timber margins, stream and ditch banks, and road rights-of-way. Adults become active in early spring and feed on newly developing buds and shoots. Most nursery damage occurs from mid-April to late June (Cleveland 1982; Haseman 1918; Anonymous 1988). Oviposition is apparently restricted to composite host plants (non-conifers). Typically, eggs are inserted into flowerlets or blossoms. After 7-10 days, ca. 1 mm long, yellowish-green nymphs emerge and begin feeding. There are 5 nymphal stages. Fourth and fifth stage nymphs (ca. 2-4 mm long) are distinguished by 4 black thoracic spots and one on the base of the abdomen. The life cycle is completed in 3-4 weeks. There are 2-3 generations per year (Haseman 1918; Sutherland 1989; Knight 1941; Ridgeway and Gyrisco 1960). Population peaks for adults generally occur in early July, early August, and early September (Rakickas and Watson 1974; Ridgeway and Gyrisco 1960).

SURVEY AND DETECTION: Damage symptoms on most host plants attributed to Lygus bugs include leaf ragging, brown, discolored tissue, premature drop of buds, flowers, and fruit; cat-facing; increased number of vegetative branches; multiple crowns; elongation of internodes; split stem lesions; swollen nodes; and, leaf crinkling (Tingey and Pillemer 1977). The appearance of plant parts damaged by *L. lineolaris* feeding has led to several colorful terms, e.g., "crazy cotton", "stop-back", "bush-head", "bushy-top" (Fig. 2). Adults and nymphs of *L. lineolaris* feed by sucking plant juices. A watery saliva is simultaneously injected into the feeding site to aid in the breakdown of plant tissues. Symptoms appear within a few weeks after feeding injury. Generally, apical dominance is lost and weak multiple leaders appear. In conifer seedlings, terminal needles are thicker and shorter and the tip is often curled (Sutherland et al. 1989).

CONTROL: Several insecticides are available to control populations of *L. lineolaris*. In Oregon, fenvalerate effectively controlled *Lygus hesperus* Knight in bare-root, Douglas-fir seedling beds (Overhulser et al. 1986). In Florida, chemical control recommendations can be obtained from local county offices of the Cooperative Extension Service. The removal of preferred host plants from edges of nurseries and destruction of favorable overwintering sites will help to reduce the damages caused by *L. lineolaris*.

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