

**NPAG DATA: HYLURGUS LIGNIPERDA  
RED-HAIRED BARK BEETLE**

**December, 1994**

**TAXONOMY:**

Phylum: Arthropoda  
Class: Insecta  
Order: Coleoptera  
Family: Scolytidae  
Subfamily: Hylesininae

Full Name: *Hylurgus ligniperda* Fabricius

**US DETECTION DATA AND/OR DISTRIBUTION MAP:**

**Initial Detection in US (Interception):**

Location: Newcomb estate, Monroe County, 3.5 miles from port of Rochester, NY  
Date: 31May94 (CAPS Pheromone Trap Survey)  
Host: Lingren funnel with alpha-pinene located near 75 acres of conifers  
(Norway spruce, European larch, red pine, scotch pine, white pine)  
Collector: C. Conrow (NY, Dept. of Agri. & Marketing)  
Identifier: N. Vandenberg with Systematics Entomology Laboratory-TSU,  
Beltsville, MD 20705-2350  
Iden. Date: 15Dec94 (date of Internet memo)

**Subsequent Detection(s) in US:**

No information is available on subsequent detections. (Are there any subsequent detections?)

**QUARANTINES:**

Many forest managers consider bark beetles to be the most economically important group of forest insects (Ciesla, 1993). Interceptions of the red-haired bark beetle are common.

Pine cargo crates containing strips of bark which harbor small numbers of adults, pupae, or larvae have spread the beetle to various countries of the world (Ciesla, 1993; Ciesla, 1988). Infested logs have also spread the beetle (Sato, 1975).

## **LIFE HISTORY:**

The adult red-haired bark beetle, *Hylurgus ligniperda*, is 5 to 5.7 mm (Harde and Hammond, 19XX).

A typical life cycle for a beetle is the following:

Egg → Larva → Pupa → Adult

The red-haired bark beetle usually has one generation per year in Europe, although up to three generations may occur in the southern regions. Two generations were recorded in the Mediterranean region of France. In New Zealand, the development from initiation of brood galleries to the first appearance of recently-molted adults takes 10 to 11 weeks. In southern France at 25 °C, (77 °F), the beetle requires 45 days to develop from egg to adult (Tribe, 1991a).

Flight time for the adults occurs from March to April in Europe (Grune, 1977). In southeastern France where two generations occur, the major activity peak is in the spring followed by a shorter peak in the autumn. The peak in the autumn coincides with the second generation; adult beetles then enter a winter hibernation. In South Africa, the major activity peak is in the autumn with minor peaks in spring and summer (Tribe, 1991a).

Adults invade freshly cut stumps, logs, and slash following timber harvesting; the adults use this material for breeding sites (Ciesla, 1993; Ciesla, 1988). Infestations of dead, dying, and fallen trees is often heavy and conspicuous (Brown and Laurie, 1968). Attacks along the root zone of residual trees occur locally, generally in trees weakened by nutrient deficiencies, mechanical injury, disease, or insect attack. Of particular interest are localized secondary attacks in the root zone of trees infected with a root pathogen, *Verticicladiella* sp. (Ciesla, 1988).

The red-haired bark beetle is monogamous. A fully-developed nest is comprised of a single, longitudinal or more often oblique egg-gallery and long, individual larval feeding tunnels which end in pupal cells (Brown and Laurie, 1968).

In Chile, emerging adults feed on the root collars and roots of one- to two-year-old seedlings and can cause seedling mortality (Ciesla, 1993).

Adults often overwinter gregariously in tunnels in the bark of the root collars or larger roots (Brown and Laurie, 1968).

## **HOSTS:**

As far as known, the beetle breeds exclusively in the bark of unhealthy *Pinus*, usually in the thick bark near the base of the stem or in large exposed roots (Brown and Laurie, 1968).

<i>Pinus canariensis</i>	Canary Is. pine	Brown & Laurie, 1968
<i>P. elliottii</i>	Slash pine	As above
<i>P. halepensis</i>	Aleppo pine	
<i>P. halepensis</i> var. <i>brutia</i>		
<i>P. montezumae</i>	Montezuma pine	
<i>P. nigra</i> var. <i>austriaca</i>	Austrian pine	
<i>P. nigra</i> var. <i>caramanica</i>	Crimean pine	
<i>P. patula</i>	Patula pine	
<i>P. pinaster</i>	Maritime pine	
<i>P. pinea</i>	Italian stone pine	
<i>P. radiata</i>	Monterey pine	
<i>P. strobus</i>	Eastern white pine	
<i>P. sylvestris</i>	Scots pine	" "

### DISTRIBUTION:

- Africa:** Widely distributed in Mediterranean area; Atlantic islands: St. Helena; South Africa (recorded in 1885)
- Asia:** Japan (introduced), Sri Lanka (Ceylon)
- Australia and Pacific Islands:** Australia, New Zealand (introduced)
- Europe:** Widely distributed in Europe - Britain (not as a breeding species), France, Russia (in Europe), and other countries.
- North America:** USA (possibly established in NY)
- South America:** Chile (discovered in 1985)

### DAMAGE WHERE ESTABLISHED:

In Chile, there was great concern that the presence of this and other bark beetles could adversely affect the establishment of new Monterey pine plantations; however, levels of damage have remained low. Silvicultural techniques, such as sanitation and slash disposal, have been recommended to reduce the number of breeding sites (Ciesla, 1993).

However, eggs, larvae, and pupae of the red-haired bark beetle have been reported in 2½-year-old seedlings in Chile. Damage tends to be more severe in natural regeneration, although planted trees are also damaged. Most planted trees that have been killed thus far either have malformed roots caused by poor planting or bark injury caused by other insects or small mammals (Ciesla, 1988).

In South Africa, the red-haired bark beetle is a minor pest. It introduces bluestain fungi, *Ceratocystis* spp. (?), into wood via its tunnels and transmits the root pathogens *Leptographium* spp. (Tribe, 1991a; Tribe, 1991b).

## **METHODS OF CONTROL:**

### **Chemical Control:**

Treatment of the stems and boles of seedlings by chemicals is possible. However, this will not affect the beetles which dig directly through the soil to the roots, although the treatment will protect the stems close to the soil surface (Tribe, 1992). Because of the expense, treatment by chemicals may not be done in a field situation.

### **Cultural Control:**

Removal of dead and dying hosts for certain bark beetles is a standard silvicultural practice. However, even if the aerial parts of dead and dying hosts are removed, the beetle could still colonize the subterranean roots.

### **Natural Enemies:**

Bark beetles have natural enemies (Tribe, 1991b); however, the natural enemies may affect too few bark beetles to prevent loss. In addition, even a few beetles may transmit fungi, such as *Ceratocystis* spp. and *Leptographium* spp. (Winfield et al., 1985).

## **PERTINENT POINTS/PREDICTED CONSEQUENCES:**

According to Dr. Martin MacKenzie (14Dec94 letter to Dr. Steven Passoa), the detection of both the red-haired bark beetle and *Leptographium truncatum*, a fungus, in New Zealand in 1974 was not a coincidence. In a survey of fungi associated with the red-haired bark beetle, Dr. Martin found that 106 of 112 flying beetles carried *Leptographium* when they landed on freshly-peeled pine logs.

In South Africa, the red-haired bark beetle is predominately a root-dwelling species which tunnels directly through the soil to its food source. Where logs are in contact with the soil, the beetle may colonize the immediate aerial parts, but only infrequently and in small numbers. There is no evidence that the beetles first orientate to the protruding stump; the beetles were found evenly distributed in all buried sections of vertically and horizontally buried logs. Because the beetle is active throughout the year in South Africa and because the beetle requires high moisture levels, the beetles are, therefore, confined to subterranean habitats where there is adequate moisture and environmental conditions are more stable (Tribe, 1992).

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