THE HOSTS AND DISTRIBUTION OF THE ROOT WEEVILS *Hylobius pinicola* (COUPER) AND *H. warreni* WOOD IN BRITISH COLUMBIA

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Larvae of the weevils *Hylobius pinicola* (Coup.) and *H. warreni* Wood damage coniferous trees by boring in the bark and cambium of roots and root collars; injury caused by the last-named species to western white pine, *Pinus monticola* Dougl., lodgepole pine, *Pinus contorta* var. *latifolia* Engelm., and Engelmann spruce, *Picea engelmanni* Parry, has been recorded in British Columbia.

The adults climb coniferous trees and feed on the terminal shoots and needles, but cause negligible damage (Warren, 1956; Stark, 1959). Although they are mainly nocturnal (Reid, 1952), they are occasionally obtained during the day by beating the foliage of conifers over a sheet spread on the ground. As this method of sampling is commonly used in the Forest Insect and Disease Survey for assessing populations of defoliating insects, a number of incidental captures of *Hylobius* adults have been made in the period 1938-1965. This paper summarizes information relating to their hosts and distribution in British Columbia and Yukon Territory.

Hylobius pinicola and *H. warreni* are superficially similar, and until 1957 were considered as a single species, *Hypomolyx piceus* (DeGeer). Consequently, some of the records obtained in the early years of the Survey, for which the specimens can not be located, are not included in this summary. Data were available for 140 specimens; 12 were reared and the remainder were perching records. Material used in this study included two specimens of *H. pinicola* and eight *warreni* in the Canadian National Collection, Ottawa; two *H. pinicola* and 34 *warreni* in the collection of the Forest Entomology and Pathology Laboratory in Victoria, determined by Mr. D. Evans; and 29 *H. pinicola* and 65 *warreni* in the Vernon Forest Insect Laboratory collection, determined by the writer.

Survey records of adults collected from foliage do not necessarily indicate true hosts, but since *Hylobius* weevils are flightless and somewhat sluggish, they may still be of some significance. Table 1 lists by host the specimens for which data are available.

TABLE 1—Specimens of **Hylobius pinicola** (Coup.) and **H. warreni** Wood Taken in Forest Insect and Disease Survey Collections from Coniferous Hosts in British Columbia and Yukon Territory, 1938-1965.

Host	H. pinicola	H. warreni
Douglas-fir	1	3
Fir, alpine	4	4
Hemlock, western	1	7
Larch, eastern	9	—
Pine, lodgepole	4	9
Pine, western white	—	3
Spruce spp.	12	61
Total	31	87

Trees of the cooler and moister regions have produced most *Hylobius* adults. Douglas fir is poorly represented considering the large number of collections taken from this species. No specimens have been found on ponderosa pine. Adults have been collected from late May to mid September.

The short-winged species, *H. warreni*, appears to be distributed over a large part of the Interior south of 57° latitude, and has been collected along the Coast from Rivers Inlet north to Stewart, and at Skagway, Alaska. The long-winged species, *H. pinicola*, is more northerly in distribution; it overlaps the range of *H. warreni* in central British Columbia, having been taken as far south as Horsefly and Blue River, and as far west as Smithers Landing. It has been collected as far north as Yukon Territory where samples have been taken at Dawson and Mayo. Fig. 1 shows localities where specimens have been collected.

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In view of the intensity of surveys in southwestern British Columbia, the absence of records of these weevils in this region is noteworthy. However, it would be premature to conclude that neither species occurs in this area, until there have been extensive surveys for root damage; most records of *H. warreni* in the Okanagan - West Kootenay region are for reared specimens, and there are no perching records in some localities where there is a high incidence of root damage. An analysis of 11 years' Survey collections showed that the frequency of perching records was almost three times as great in the Prince George Forest District and Yukon Territory as in the Kamloops and Nelson Forest districts of southern British Columbia. While this may merely reflect a higher population level in the northern areas, the scarcity of adults in collections from some southern localities where root damage is common suggests that a difference in the behaviour of the insects may be responsible for the disparity. Climatic factors in the northern regions, such as lower daytime temperatures or short summer nights may be more conducive to diurnal activity than are conditions prevailing in southern British Columbia.

References

Reid, R. W. 1952. **Hypomolyx piceus** (DeG.) on lodgepole pine. Can. Dept. of Agr., For. Biol. Div. Bi-monthly Progress Rept. **8:** (4) 2-3.

Stark, R. W. 1959. Studies of the pine root weevil **Hylobius warreni** Wood in Alberta (1957). Interim Report (1959), For. Biol. Lab., Calgary, Alta.

Warren, G. L. 1956. The effect of some site factors on the abundance of **Hypomolyx piceus** (Coleoptera: Curculionidae). Ecology **37:** (1) 132-139.

ANNOTATED LIST OF FOREST INSECTS OF BRITISH COLUMBIA PART XIII. BREPHINAE, GEOMETRINAE, STERRHINAE AND LARENTIINAE (GEOMETRIDAE)

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Members of the subfamilies Brephinae, Geometrinae, Sterrhinae and Laurentiinae are not regarded as economically important forest insects in British Columbia. Only three species are known to have reached epidemic proportions: *Epirrita autumnata omissa* Harr. in 1954 on apline fir in the central Interior; *Rheumaptera* sp. in 1962 on western white birch in the Skeena River Valley; and *Operophtera bruceata* Hlst. in 1958 and 1959 on trembling aspen and willow in north-eastern British Columbia: all were of short duration.

Larvae of Brephinae differ from those of the other three sub-families in having four pairs of abdominal prolegs regularly graduated in size. The larvae of Geometrinae, Sterrhinae, and Larentiinae have only one pair of abdominal prolegs. The body may be short and stout or twig-like with lobed sides, prominences and enlarged tubercles; or slim and tapered with a sharply bilobed head. The larvae range from green, buff, brown, grey, or black. They are solitary defoliators of conifers and broadleaved trees and shrubs. The number of collections per host is shown in brackets only when fewer than five. Pupation may occur in the litter on the forest floor or in silken cocoons in the foliage or bark crevices of trees or shrubs.

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BREPHINAE

Brephos infans oregonensis Swett—*Alnus* spp., *Betula papyrifera* Marsh (2 records). Distributed throughout southern British Columbia including