

Snyder & Hansen, *P. oligandrum* Dreschsler, *P. acanthicum* Dreschsler, *P. rostratum* Butler, *R. endophytica* Saksena & Vaartaja, *Cylindrocarpum radiculicola* Wr., *C. obtusipora* (Cke. & Hark.) Wr., *Helminthosporium* sp., *Curvularia* sp., *Stemphylium* sp., and *Phoma* sp.—O. Vaartaja and A. W. Hill.

## PRAIRIE PROVINCES

**Insects and Mites Associated with Black Knot of Cherry, *Dibotryon morbosum* (Schw.) Theiss. and Syd.**—This disease is widely distributed in Manitoba and Saskatchewan on choke cherry, *Prunus virginiana* L. and pin cherry, *Prunus pennsylvanica* Lf. and in some years is very prevalent. When insect and disease surveys in the two provinces disclosed that a number of insects and mites inhabit the knots, a study was initiated to determine the species involved and whether they feed in the knots or merely utilize them for hibernation. Collections of knots from May to September in 1963 revealed the presence of the following insects and mites, identified by members of the Entomological Research Institute.

Order	Family	Species
Lepidoptera	Aegeriidae	<i>Synanthedon pictipes</i> G. & R.
	Carposinidae	<i>Carposina</i> sp.
	Gelechiidae	<i>Telphusa</i> sp.
	Tineidae	<i>Tinea</i> sp.
	Pyralidae	<i>Mineola tricolorella</i> Grt.
Diptera	Chloropidae	<i>Gaurax</i> poss. <i>montanus</i> Coq.
		<i>Gaurax festivus</i> Loew.
		<i>Oscinella</i> sp. nr. <i>catapae</i> Mall.
Coleoptera	Melandryidae	<i>Canifa</i> sp.
	Curculionidae	<i>Conotrachelus nenuphar</i> (Hbst.)
Neuroptera	Chrysopidae	<i>Chrysopa</i> sp.
Acarina	Acaridae	<i>Thyreophagus</i> sp. nr. <i>corticalis</i> (Michael)
		<i>Histiogaster</i> sp.

The species most commonly encountered were a gelechiid, *Telphusa* sp., and the weevil, *Conotrachelus nenuphar* (Hbst.). These two species and a beetle, *Canifa* sp., are the only ones noted thus far actually feeding in the knots. It is known that certain species of the families Tineidae and Acaridae are fungivorous, but no evidence of feeding by members of these families has been observed in this study. Species such as *Synanthedon pictipes* G. & R. and *Mineola tricolorella* Grt., a borer and defoliator, respectively, on choke cherry, and the predator *Chrysopa* sp., probably overwinter in the knots.

This study has uncovered some interesting host associations. According to J. G. Chillicot the specimens of *Gaurax* are quite rare. Future studies will attempt to clarify the association of these insects and mites with the disease, and additional collections will be made to extend knowledge of the species complex involved.—H. R. Wong and J. C. E. Melvin.

**The Host and Distribution of *Agrilus criddlei* Frost in Canada.**—In his description of *Agrilus criddlei*, Frost (Can. Entomol. 52:249-250, 1920) indicated that it was known only from Aweme, Manitoba (the type locality); Toronto, Ontario; and Rigaud, Quebec. Fisher (Bull. U.S. Nat. Mus. 145, 1928) was unable to add to the known distribution of the species or to indicate its host in a revision of the North American species of the genus *Agrilus*. Additional information has since been obtained on the distribution of this species in Canada through H. F. Howden of the Entomological Research Institute, Ottawa, and from regional units of the Canadian Forest Insect Survey. Recent investigations on insect-produced galls on forest trees and shrubs in Manitoba and Saskatchewan have disclosed the host and some aspects of the seasonal activity of *A. criddlei* in this region.

To date, the only identified host of the species in Manitoba and Saskatchewan is *Salix bebbiana* Sarg. but other willow species may also be attacked. The female borer usually oviposits in the upper portion of the main stem or larger branches on open-growing willow clumps. During early stages the larvae feed mainly in the cambium and sapwood. This disturbance causes abnormal stem swelling and the production of a "gall" that may range in size from a slight swelling to twice the normal diameter. Immediately below the gall, the stem is somewhat constricted and narrower than the corresponding point above the area of attack. The portion of the stem beyond the gall ultimately dies.

Dissections of galls during the early winter revealed only a single larva in each of the galls examined; at least two instars have been found, and there is evidence to sug-

gest that more than 1 year is required to complete the life cycle. After girdling the sapwood, the mature larva enters the heartwood and tunnels beyond the gall to a location near the surface where it constructs a pupal cell. Frass is packed tightly behind the larva in the tunnel. The larva overwinters in a U-shaped position with the head directed toward the stem's surface. Pupation occurs the following spring and the adult emerges about mid-July through a D-shaped hole.

Nine new distributional records have been obtained for Canada: Boiestown, New Brunswick; Bridgeport and South March, Ontario; Beaver Creek north of Riverton, Pine Falls, Riding Mountain National Park, and Spruce Woods Forest Reserve, Manitoba; Katapwa, Saskatchewan; and Calling Lake, Alberta.—H. R. Wong and B. B. McLeod.

## BRITISH COLUMBIA

**Observations of Overwintering *Pseudohylesinus* and *Trypodendron*.**—Most adult bark beetles overwinter under the bark of the host trees or logs in which they have developed. Some drop and enter the bark of duff at the base of the host tree. Others fly to suitable habitats to hibernate in the forest duff, in the bark at tree bases, or in twigs and branches in the crowns (Chamberlin, W. J. 1958. The Scolytoidea of the Northwest, Oregon, Washington, Idaho and British Columbia. Oregon State Coll., Corvallis, Oregon.).

In November 1964, two bark beetle species, *Pseudohylesinus granulatus* (LeConte) and *Pseudohylesinus grandis* Swaine, were found near Cowichan Lake, Vancouver Island, hibernating in the bark of green trees standing next to a clear-cut area. This area was logged the previous winter and burned in the autumn of 1964. These beetles, as well as *Trypodendron lineatum* (Oliv.) (Dyer and Kinghorn, Can. Entomol. 93: 746-759, 1961), had apparently bred in the slash and stumps and moved into the forest edge to overwinter. The forest comprised several species of large, mature conifers. The following table shows the number of beetles found in 1 sq. ft. of bark from the base of each of five adjacent trees, about 50 ft. from the stand edge.

Tree species	<i>Trypodendron lineatum</i>	<i>Pseudohylesinus granulatus</i>	<i>Pseudohylesinus grandis</i>
Amabilis fir <sup>1</sup> .....	49	27	3
".....	24	16	8
".....	12	1	5
Douglas fir <sup>2</sup> .....	149	0	0
Western hemlock <sup>3</sup> .....	17	0	0

<sup>1</sup>*Abies amabilis* (Dougl.) Forb.

<sup>2</sup>*Pseudotsuga menziesii* (Mirb.) Franco.

<sup>3</sup>*Tsuga heterophylla* (Raf.) Sarg.

It appears that *P. granulatus* selects *Abies* bark for hibernation. Its borings produced a conspicuous brown dust which was observed from ground level to about 8 ft. on the tree bole. Entrance holes were most dense near the ground and some were just below ground level. The beetles bored nearly straight galleries from 6 to 15 mm. into the bark but did not quite touch the cambium. As many as four beetles entered by the same hole and made separate niches close together in the inner bark. *T. lineatum* frequently occupied the same hole. A few *P. grandis* were also found in *Abies* bark where each beetle had made a single short tunnel, about 5 mm. long. Neither *P. granulatus* nor *P. grandis* were found in samples of about 20 sq. ft. of duff from tree bases in the same location although hundreds of *T. lineatum* were present. From numerous samples of bark and observations of the boring dust it was found that most of the *P. granulatus* overwintered within about 75 ft. of the forest edge, but a few could be found 200 ft. into the stand. Damaged bark around the entrance holes indicated that woodpeckers had found many of these beetles.

Chamberlin (*loc. cit.*) states that *P. sericeus* (Mann.) and *P. grandis* were found hibernating as adults in the thick moss which grows abundantly on the trunks of oak trees in Oregon adjacent to stands of second-growth Douglas fir. Although there were dense patches of moss growing on the trunks of the amabilis fir in British Columbia, *P. granulatus* had frequently penetrated the moss and bored into the bark.

Identification of these beetles was made by D. Evans of the Victoria laboratory.—E. D. A. Dyer and W. W. Nijholt.