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THE DISTRIBUTION OF THE RHODODENDRON WHITE FLY  
IN BRITISH COLUMBIA. NOTES ON ITS LIFE HISTORY  
AND CONTROL MEASURES.

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On March 13th a visit was paid the Vancouver Plant Inspection Office by members of the United States Bureau of Entomology and Plant Quarantine, who discovered on an estate near Seattle an outbreak of the rhododendron white fly, *Dialeurodes chittendeni* L., on plants recently imported from Kent, England. As rhododendrons are more or less native in the Puget Sound Area, and as there are extensive ornamental plantings in this region, the United States authorities were carrying on a survey to determine the distribution of the pest with a view to eradicating it if possible. Our co-operation was solicited and as a result of this meeting, a survey was made of all rhododendrons imported into British Columbia from the Old Country during the past six years, with the result, that a matter of four or five different consignments imported in the fall of 1933 and the spring of 1934, for Vancouver and Victoria consignees, were found to be slightly infested with the rhododendron white fly. During this survey it was interesting to note that no interceptions were made on stock imported earlier than the fall of 1933 and the spring of 1934, although, as I have stated, shipments imported as far back as the spring of 1928 were examined. It may be that our climatic conditions are not suitable for its continuance. However, we must not overlook the possibility that should this pest arrive in its new habitat in sufficient numbers, it might overcome environmental resistances due to unfavourable climatic conditions, and become established.

With this in mind, our staff of inspectors are examining these importations very closely. British Columbia has built up quite an export trade in plant life and the export in rhododendrons was quite a feature this last season. In this regard, all evergreen rhododendrons and azaleas exported to the United States of America are subject to vacuum fumigation with hydrocyanic acid gas.

#### History of the Insect

The rhododendron white fly was first found in Surrey, England, in 1926, and was reported on by the British Ministry of Agriculture. However, it was not identified and determined as a new species until 1928. Fryer, in "Insect Pests of Crops," 1928-1931, states: "Unfortunately the infestation previously recorded proved not to be an isolated one, and

it has become evident that the pest is too generally established to admit of hopes of its eradication. It is yet too early to estimate its importance as a pest in Britain."

In our coastal area, adults settle on the young foliage from the latter part of May until possibly the first or second week in June, and are extremely active during the bright sunny weather. When the bush is touched they fly around but speedily re-settle on the lower surfaces of the foliage.

#### Susceptibility of Attack

As far as our observations go, and those previously recorded, only smooth-leaved species of rhododendrons and hybrids are chosen as host plants. The most susceptible rhododendrons appear to be *Ponticum* varieties and hybrids. The resistant factor is apparently a physical one, depending upon the presence of hairs on the epidermal layers.

#### Symptoms of Attack

The first sign of attack is a mottling of the older leaves on the lower surface, on which the larvae feed. During the early summer the upper surfaces of the leaves become drenched with a vast quantity of honey dew excretion which provides a suitable medium for the growth of sooty moulds. Laing records the presence of "*Dematium pullulans*" as occurring in large quantities on the matrix formed by the falling honey dew.

#### Descriptions

Descriptions of this pest as outlined by G. Fox-Wilson, Entomologist, stationed at the Wisley Laboratory, are as follows:

"**The Egg** is elongate-oval, smooth and provided with a shallow stalk which serves partly as an attachment for the egg.

"**The Larva** is semi-transparent, elliptical, becoming rounder in the pupal stage.

"**The Pupa** case is transparent, white and of a papery texture, 1.25 mm. long and from 0.90 to 0.95 mm. broad. The margin is furnished at wide intervals with strong, stoutish spines. Rudimentary legs and mouth parts may be distinctly seen with a good pocket lens.

"**The Adult** is of the general colour which prevails in the family, that is, unspotted white, mealy wings and yellow body. The wing expanse is 8 mm. and the length about 1.3 mm. The species proved to be single brooded this year but it is possible, under favourable seasons a second brood might occur. This is suggested from a report of the presence of pupae on foliage in mid-September."

#### Control Measures

The fact that rhododendrons are more or less a native shrub in the coastal area, particularly around Puget Sound, and as there are extensive ornamental plantings in the coastal region of British Columbia and the State of Washington, the possibilities of control, should this pest become

generally distributed, would be difficult. The fact that the insect is a most difficult one to locate in its earlier stages of infestation might allow this pest to become well established before any real injury would be noticed. However, from the control measures followed up after the survey in British Columbia all last season, we found that a highly refined 2% emulsified oil, with the addition of one half teaspoonful of nicotine sulphate to a gallon of the mixture, applied to the under side of the leaves with a good pressure pump, gave a very good control, one of the main features of such control measures being a thorough application. An angle nozzle should be used so that all portions of the under sides of the leaves might be drenched.

Mr. W. Downes, Entomological Laboratory, Victoria, kindly assisted us in the carrying out of control measures in the Victoria area and has made one or two suggestions which should be beneficial in the control of this pest. Mr. Downes suggests that a nicotine dust of 3% might be used to good effect. Mr. Downes also carried on some experimental work with "mineral seal" oil emulsion, and informed me that a stock solution might be made up as follows: One pint of "mineral seal" oil, eight teaspoons powdered milk, three teaspoons dextrin, three teaspoons ammonia, and four ounces of water. The ammonia is placed in the water. The powdered milk and dextrin is thoroughly dissolved and stirred in with the ammonia and when this has been completed the oil is gradually added and must be churned vigorously in order to get a good emulsion. For home use, where small quantities are made, Mr. Downes suggests the use of a small hand churn. In the case of larger quantities, a hand-made affair with a plunger could be set up so that the agitation could be kept up incessantly while the mixture is being made. To use this stock solution, it must be diluted one part to fifty parts of water.

Mr. G. Fox-Wilson suggests hand picking of the infested leaves, and spraying infested bushes with a highly refined 2% emulsified oil.

A further survey of the local plantations of rhododendron shrubs will be made in the early spring, particularly those in which the infestation was found, with a view to obtaining further information as to how thorough our previous sprayings and control measures have been.

#### References

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