Although these three pests were greatly reduced in numbers in many areas, the reduction was not sufficient to be of economic importance to the fruit grower. In 1950, the two-spotted spider mite did more damage in the Okanagan Valley than at any time previously; severe infestations were very common from Penticton north to Salmon Arm. Pacific mite populations were slightly larger than in 1949, and medium to severe infestations occurred in several orchards. The Willamette mite, which was found in the fall of 1949 at Summerland for the first time in the Province, occurred throughout the Valley from the International Boundary north to Kamloops. Severe infestations developed in a number of orchards.

SUMMARY

In the British Columbia fruit- growing area the coldest winter on record occurred in 1950. Temperatures of −15 to −15°F. were common. This was 15 to 20 degrees below normal.

Field collections of the overwintering forms of the European red mite, the two-spotted spider mite, the Pacific mite, and the Willamette mite were made from the latter part of February to the end of April, 1950, to determine the effects of the low winter temperatures. Practically 100 per cent. of the European red mite winter eggs were killed in the Salmon Arm area, where temperatures of −30 to −40°F. were common. The European red mite was not found in this area until August, 1950, but by the spring of 1951 it was common enough that control measures were necessary. The two-spotted spider mite appeared to be the hardiest of the three forms that winter as adults. Although these three mites were greatly reduced in numbers by the cold winter, summer populations were larger during the growing season of 1950 than in 1949.

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A PRELIMINARY LIST OF THE HEMIPTERA OF THE KOOTENAY VALLEY[1]

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INTRODUCTION

Studies to determine the insect vector or vectors of the little cherry virus disease in the Kootenay Valley were carried out during the seasons of 1946-49. As part of the investigation a survey was made of the insects occurring on sweet cherry and other host plants common in the Valley. Although all orders of insects were collected, little interest was taken in other than the Hemiptera, since nearly all the virus vectors known belong to that order. The accompanying list forms only part of the total.

METHODS, HOSTS, AND COLLECTION AREA

Collecting was done by various means: (1) a sweeping net, (2) knockdown sprays and a large canvas ground sheet, (3) a hand suction apparatus, and (4) 6-inch-by-12-inch plywood boards coated with "Deadline" tanglefoot on one surface and hung by wire loops in tree or shrubs. The last-named method proved highly satisfactory and yielded species that were not taken from the same hosts by any other means. There was some difficulty in removing the tanglefoot from the specimens. The most successful procedure involved placing a drop of kerosene on each specimen, which was then loosened and removed from the board with dissecting

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needles and placed in a small beaker of kerosene. The beaker was warmed; the contents were gently swirled, and filtered through a number 4 Whatman filter paper. The insects were removed from the filter paper and placed in petroleum ether, gently swirled, and poured on to a dry filter paper. The petroleum ether quickly evaporated, and then the specimens were mounted or stored. Sometimes while the insects were in the kerosene and/or petroleum ether it was necessary to use fine dissecting needles to tease out large masses of the tanglefood trapped in the legs. The tanglefood collecting method was useful for most Hemiptera and Coleoptera, and some Diptera and Hymenoptera.

Regular collections were made from the following hosts throughout the growing season: sweet cherry, *Prunus avium* L.; wild cherry, *Prunus emarginata* (Dougl.) Walper var. *mollis* (Dougl.) Brewer; apple *Pyrus malus* L.; wild rose, *Rosa nutkana* Presl.; thimbleberry, *Rubus parviflorus* Nutt.; willow, *Salix* sp.; poplar, *Populus trichocarpa* T. & G.; red clover, *Trifolium pratense* L.; alfalfa, *Medicago sativa* L.; and cover crops: mixed grasses, clovers, and alfalfa.

Collections were made in the area limited by Creston, at the south end of Kootenay Lake; Kootenay Bay, 50 miles north, on the east side of the lake; Nelson, 50 miles north and 30 miles west, on the west arm of the lake; and Kaslo, 80 miles north, on the west side of the lake. Collections in 1946 were made by Mr. Harry Andison of the Fruit Insect Laboratory, Victoria, British Columbia.

DESIGNATION OF PLANT "HOSTS"

The indiscriminate usage of the term *host* has been the bane of taxonomists for some time, particularly in the Heteroptera and Homoptera. In the accompanying list the plant-insect relationship is designated as follows: where no symbol is given, the plant listed is one on which the insect species was collected, and does not imply a food or host-plant relationship. H (host) indicates a plant in which eggs were deposited and on which nymphal development occurred. F (food plant) indicates a plant known to be utilized as a source of food by adults. The additional symbol *Test* indicates that the insect species survived on sweet cherry, at least during the experimental period in vector feeding tests.

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TABLE I

HOMOPTERA

Insect Species	Collection Source
CICADELLIDAE	
Agallia quadripunctata (Prov.)	cover crop
Aceratagallia californica (Baker)	sweet cherry
Oncopsis pruni (Prov.)	cover crop, flying near willow
Oncopsis spp. (two)	flying near willow
Idiocerus spp. (two)	on cages surrounding test trees
Idiocerus spp. (five)	willow
Gyponana angulata (Spbg.)	cover crop
Gyponana serrata DeL.	thimbleberry, willow
Aphrodes albifrons (L.)	thimbleberry, poplar, cover crop, sweet cherry. Test
Aphrodes costata (Panz.)	cover crop, sweet cherry, thimbleberry
Draeculacephala sp.	cover crop
Neokolla hieroglyphica (Say)	cover crop
Dikraneura absenta DeL. & C.	sweet cherry, F; cover crop, F; poplar. Test
Dikraneura carneola (Stal)	sweet cherry. Test

Dikraneura sp., prob. *carneola* (Stal)	cover crop
Dikrella cruentata Gill.	sweet cherry, F; thimbleberry, F. Test
Empoasca atrolabes Gill.	thimbleberry
Empoasca incida DeL.	willow, poplar
Empoasca maligna Walsh	sweet cherry, H; cover crop. Test
Empoasca deluda DeL.	cover crop
Empoasca sp. near *vincula* DeL.	wild cherry, sweet cherry . Test
Empoasca sp.	thimbleberry
Empoasca sp.	sweet cherry
Typhlocyba ariadne McA.	sweet cherry, F; cover crop; willow; thimbleberry. Test
Typhlocyba commissuralis Stal	willow. Test
Typhlocyba pomaria McA.	sweet cherry, H; wild cherry; cover crop. Test
Typhlocyba prunicola Edw.	sweet cherry
Typhlocyba rosae (L.)	wild rose, H; sweet cherry, H. Test
Typhlocyba sp.	sweet cherry, willow. Test
Typhlocyba sp.	sweet cherry, thimbleberry
Typhlocyba sp.	sweet cherry
Erythroneura sp. near *acicularis* Beam.	wild cherry. Test
Erythroneura aspera B. & G.	sweet cherry, F. Test
Erythroneura insigna B. & G.	sweet cherry. Test
Erythroneura plena Beam.	wild cherry, H; sweet cherry, F. Test
Erythroneura sp. *obliqua* group?	sweet cherry
Erythroneura sp.	sweet cherry, F; wild cherry. Test
Erythroneura sp.	wild cherry. Test
Erythroneura sp.	willow. Test
Scaphytopius acutus (Say)	thimbleberry, poplar, cover crop, sweet cherry. Test
Scaphytopius oregonensis (Baker)	sweet cherry
Balclutha punctata (Thumb.)	sweet cherry, cover crop. Test
Macrosteles divisus (Uhl.)	sweet cherry, cover crop. Test
Osbornellus borealis DeL. & M.	willow, sweet cherry
Colladonus flavocapitatus (Van D.)	poplar, wild cherry
Colladonus geminatus (Van D.)	cover crop; alfalfa, F; sweet cherry. Test
Colladonus montanus (Van D.)	cover crop; F; sweet cherry. Test.
Idiodonus cockerelli (Ball)	sweet cherry
Twiningia pellucida (Ball)	willow
Fitchana twiningi (Uhl.)	willow
Paraphlepsius bifidus (S. & DeL.)	sweet cherry
Euscelidius schenkii (Kbm.)	cover crop; red clover, F
Scleroracus sp.	cover crop. Test
Exitianus exitiosus (Uhl.)	sweet cherry, cover crop. Test
Psammotettix affinis (G. & B.)	sweet cherry
Psammotettix sp.	cover crop
Sorhoanus flavo-virens (G. & B.)	cover crop
Latalus sp.	cover crop
DELPHACIDAE	
Delphacodes consimilis (Van D.)	cover crop
Delphacodes pellucida (F.)	cover crop
Delphacodes sp.	cover crop
CERCOPIDAE	
Philaenus leucophthalmus (L.)	sweet cherry; cover crop, H; thimbleberry; wild cherry. Test
Aphrophora permutata Uhl.	cover crop, on cages enclosing cherry trees
Clastoptera obtusa var. *tristis* Van D.	willow
PSYLLIDAE	
Psylla trimaculata var *astigmata* Crawf.	sweet cherry, F; willow; wild cherry, F. Test
Aphalara persicaria Cald.	cover crop
CICADIDAE	
Platypedia areolata (Uhl.)	sweet cherry, on cages enclosing cherry trees
Okanagana vanduzeei Dist.	sweet cherry
MEMBRACIDAE	
Telamona pyramidata Uhl.	willow

APHIDIDAE
Myzus cerasi (F.) — sweet cherry, H. Test

COCCIDAE
Phenacoccus aceris (Sign.) — sweet cherry, H; apple, H. Test

HETEROPTERA

TINGIDIDAE
Corythucha mollicula O. & D. — willow, F. Test

PENTATOMIDAE
Euschistus variolarius (P.B.) — cover crop, on cages enclosing cherry trees. Test
Cosmopepla bimaculata (Thom.) — cover crop. Test
Eurygaster alternatus (Say) — cover crop
Meadorus lateralis (Say) — thimbleberry, willow

ARADIDAE
Aradus funestus Bergr. — on cages enclosing cherry trees
Aradus inornatus Uhl. — on cages enclosing cherry trees
Mezira pacifica Usinger — on cages enclosing cherry trees

NABIDAE
Nabis alternatus Parsh. — cover crop
Nabis rufusculus Reuter — cover crop

LYGAEIDAE
Stignocoris rusticus (Fall.) — sweet cherry, cover crop. Test
Kleidocerys franciscanus Stal — cover crop
Kleidocerys resedae (Panz.) — on cages enclosing cherry trees

MIRIDAE
Stenotus binotatus (F.) — cover crop
Miris dolobratus (L.) — cover crop
Stenodema virens (L.) — cover crop
Capsus ater (L.) — cover crop
Lygus hesperus Knight — cover crop
Lygus elisus Van D. — cover crop
Lygus shulli Knight — cover crop, H; wild cherry. Test
Lygus ceanothi deleticus Knight — thimbleberry
Lygus sp. — sweet cherry
Deraeocoris fasciolus Knight — sweet cherry. Test
Deraeocoris sp. — sweet cherry
Phytocoris interspersus Uhl. — willow
Phytocoris hesperius Knight — poplar
Plagiognathus obscurus Uhl. — cover crop
Plagiognathus chrysanthemi (Wolff) — cover crop
Hyaliodes harti Knight — willow, sweet cherry, cover crop. Test
Diaphnidia pellucida Uhl. — willow
Dicyphus sp. — thimbleberry. Test
Pilophorus sp. — willow

Summary

A preliminary list of 108 species of Hemiptera collected in the Kootenay Valley of British Columbia from 1946 to 1949 is recorded. These include 63 species of Cicadellidae, 3 of Delphacidae, 3 of Cercopidae, 2 of Psyllidae, 2 of Cicadidae, 1 of Membracidae, 1 of Aphididae, 1 of Coccidae, 1 of Tingidae, 4 of Pentatomidae, 3 of Aradidae, 2 of Nabidae, 3 of Lygaeidae, and 19 of Miridae.