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DISTRIBUTION OF *TRIRHABDA PILOSA* BLAKE (COLEOPTERA: CHRYSOMELIDAE), ATTACKING BIG SAGEBRUSH IN THE INTERIOR OF BRITISH COLUMBIA¹

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Introduction

In 1960 and 1961, distribution surveys were made of *Trirhabda pilosa* Blake, unofficially named the sagebrush beetle, in British Columbia. Interest in this insect centers on its apparent ability to control big sagebrush, *Artemisia tridentata* Nutt. From 1954 to 1961, larvae and adults of this species have attacked the foliage of big sagebrush plants on more than 3500 acres of rangeland in the Kamloops area. About fifty per cent of the plants attacked have been killed.

Big sagebrush normally inhabits overgrazed or otherwise impoverished volcanic soils in the lower and middle grass zones (i.e. 1000-2000 and 2000-3000 foot elevations, respectively) on much of the rangeland in south-central British Columbia. It is considered to be native in the former zone and an invading weed in the latter. In most locations its elimination or retardation would result in improved stands of native grasses.

In July, 1954, Mr. Wm. L. Pringle, Agronomist of the Canada Range Experimental Farm at Kamloops, observed a two-acre stand of big sagebrush which had been severely defoliated. This was near the Lac le Jeune road, about six miles southwest of Kamloops (3). Close examination showed numerous small

metallic blue beetle larvae feeding on the leaves of the sagebrush. Adults collected from this site were identified as *Trirhabda pilosa* Blake by Mr. W. J. Brown, Entomology Division, Canada Department of Agriculture, Ottawa (1). This identification was confirmed by Mrs. Blake, who described and named *T. pilosa* in 1931, from specimens taken in California, Nevada and Wyoming (2). She listed *Artemisia tridentata* Nutt. as the host. In British Columbia, an authoritative identification of *T. pilosa* was uncertain for a time, because three other species of *Trirhabda* also have been taken. Specimens of *T. attenuata* (Say) and *T. flavolimbata* Mann. have been collected from the Kamloops area and *T. canadensis* (Kby.) from the Vernon area. The first is very similar to *T. pilosa*.

Careful checking of the Canadian National Collection by Mr. W. J. Brown showed that specimens of *T. pilosa* had been taken in this province at Seton Lake, Nicola, Summerland, and Kamloops. The earliest record was a single specimen taken in the Kamloops area in 1890. Although these records indicate that the insect has been taken from widely separated locations, no early reports have been found which record defoliation of sagebrush similar to that noted by Pringle.

Methods and Results

In 1960 and 1961 surveys were made

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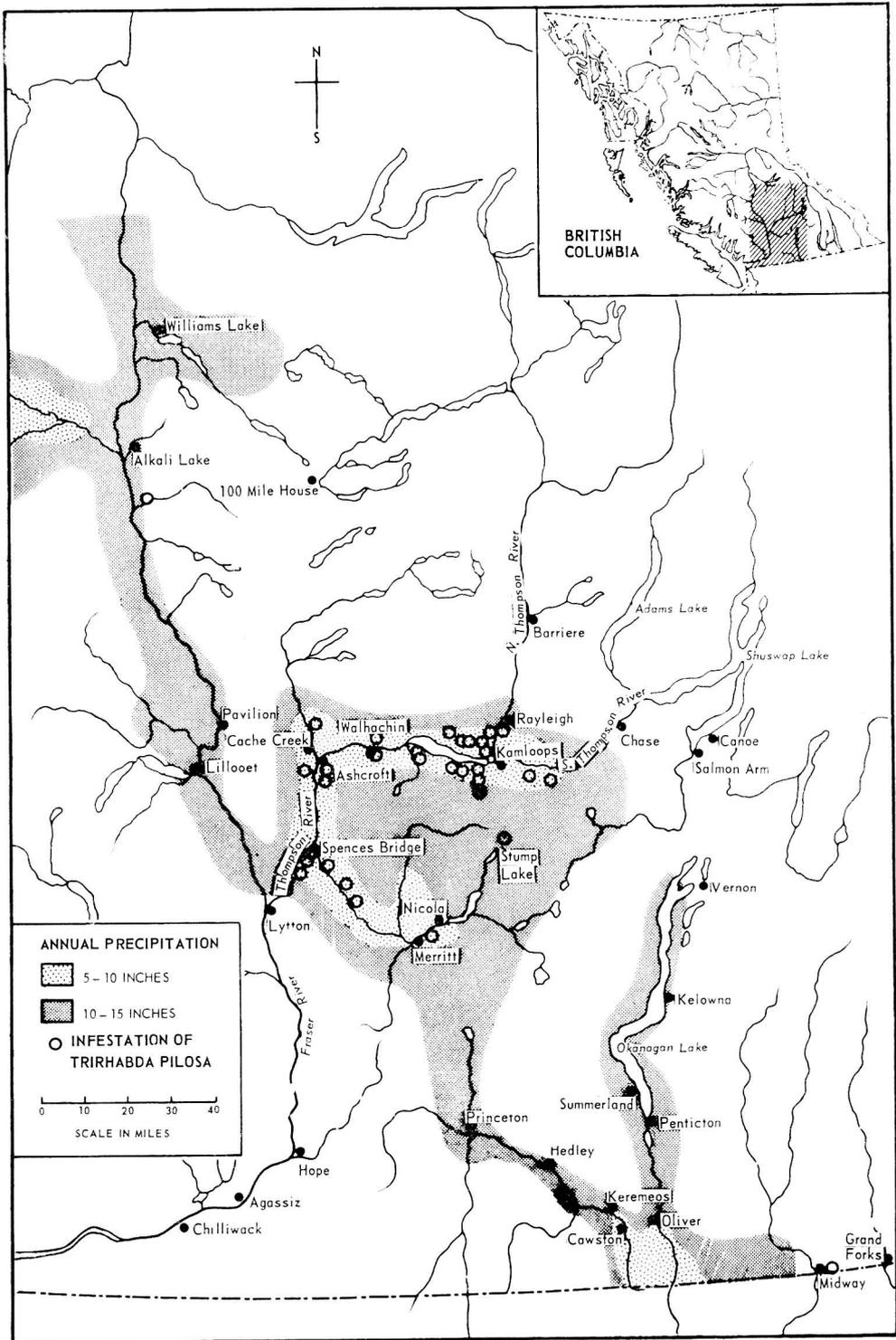


Fig. 1—Distribution of *Trirhabda pilosa* Blake in south-central British Columbia.

of *T. pilosa* in stands of big sagebrush and of areas which previously had been attacked. Active infestations were assessed by recording the numbers of larvae and adults per plant in the following categories:

Very light	—1 to 5
Light	—6 to 15
Moderate	—16 to 50
Heavy	—51 and over

Previously attacked stands of sagebrush were assessed on the basis of apparent damage caused by the insect.

T. pilosa appears to be fairly generally distributed in stands of big sagebrush in British Columbia. (Fig. 1). In most areas infestations of *T. pilosa* were recorded as light or very light and were restricted to fewer than ten sagebrush plants at any one location. The resulting larval and adult feeding on the sagebrush foliage appears to be causing so little damage as to be negligible. Single moderate infestations of one-quarter and two acres, respectively, were recorded at Merritt and Keremeos. Three light, one moderate, and four heavy infestations from four to 300 acres were recorded at Kamloops. There, three previously attacked stands of sagebrush ranging from 80 to 1500 acres

were recorded as heavy. The heavy infestations indicate that stunting and death of big sagebrush will continue at Kamloops.

Discussion

To date, the sudden increase of *T. pilosa* has not been satisfactorily explained. It has been postulated that a new physiological strain may have developed, or that a hybrid may have developed from a crossing of two *Trirhabda* species present in the area. A single factor such as greater longevity of the adults and therefore greater fecundity, or particularly favourable environmental or host plant conditions, might explain the heavy feeding damage which has resulted in killing some big sagebrush.

Summary

T. pilosa Blake appears to be generally distributed in stands of big sagebrush, *Artemisia tridentata* Nutt., in south-central British Columbia. In most areas foliage feeding by light infestations of this insect has caused little or no apparent damage. However, in the Kamloops area, feeding by heavy infestations has killed or severely retarded the growth of big sagebrush on more than 3500 acres of rangeland.

Acknowledgement

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