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THE COTTONWOOD LEAF-MINING BEETLES IN SOUTHERN ALBERTA.

BY E. H. STRICKLAND,

Entomological Branch, Dominion Depr. of Agriculture.

Cottonwoods and other poplars have proved to be the trees best adapted for shade and ornamental purposes on the treeless plains of Southern Alberta and Saskatchewan. It is, therefore, to be regretted that every year the leaves of these beautiful trees are made unsightly by the presence of large blackened areas, which may extend over their entire surface. In some years hardly a leaf on badly attacked trees escapes this disfigurement.

By the middle of June an examination of the cottonwood trees around Lethbridge, Alberta, can hardly fail to reveal the presence of small groups of holes on the underside of the leaves, (Fig. 2) with perhaps a few smaller groups on the upper side also (Fig. 1, A).

A closer examination of these holes shows that they are never more than about 1 mm. in diameter and are polygonal in shape, being bounded by the finer reticulations of the leaf veins. They do not entirely pierce the leaf but extend to the upper epidermis, which appears as a transparent membrane when the leaf is held to the light. After a few weeks they become more circular in outline, and are surrounded with a cork-like growth.

These holes are the feeding punctures of the Cottonwood and the Poplar-leaf-mining beetles (*Zeugophora scutellaris* Suffr. and *Z. abnormis* Lec.).

The former beetle, which we shall consider more especially in this article, is a pretty little species, measuring 4 mm. long, with a bright yellow thorax and with black wing covers. (Fig. 3). This beetle feeds most abundantly on cottonwoods, though it is found sparingly on other poplars.

Weiss and Nicolay* in recording the occurrence of this beetle in New Jersey, where they state that it appeared first in 1919, describe it as a "European Poplar Leaf-miner." We are inclined to doubt whether this species has been imported from Europe. Mr. Criddle tells me that, from the earliest dates upon which he made observations on the cottonwood-infesting insects of Manitoba this beetle has been abundant, especially upon the native cottonwoods in river bottoms. This observation was made in 1903, when very few cottonwoods had been imported into Manitoba from elsewhere, and Mr. Criddle has noticed that the beetles do not spread rapidly to the imported trees. In Alberta our first personal record was made in 1913, but the inhabitants of Lethbridge informed us at the time that, in so far as they had observed, the cottonwood leaves were always more or less disfigured with black blisters.

Zeugophora abnormis is a beetle similar in size to *Z. scutellaris*, but it is entirely black. It is rarely seen on cottonwoods, but it confines its attention chiefly to Balms of Gilead.

*Ento. News, vol. 30, May, 1919.