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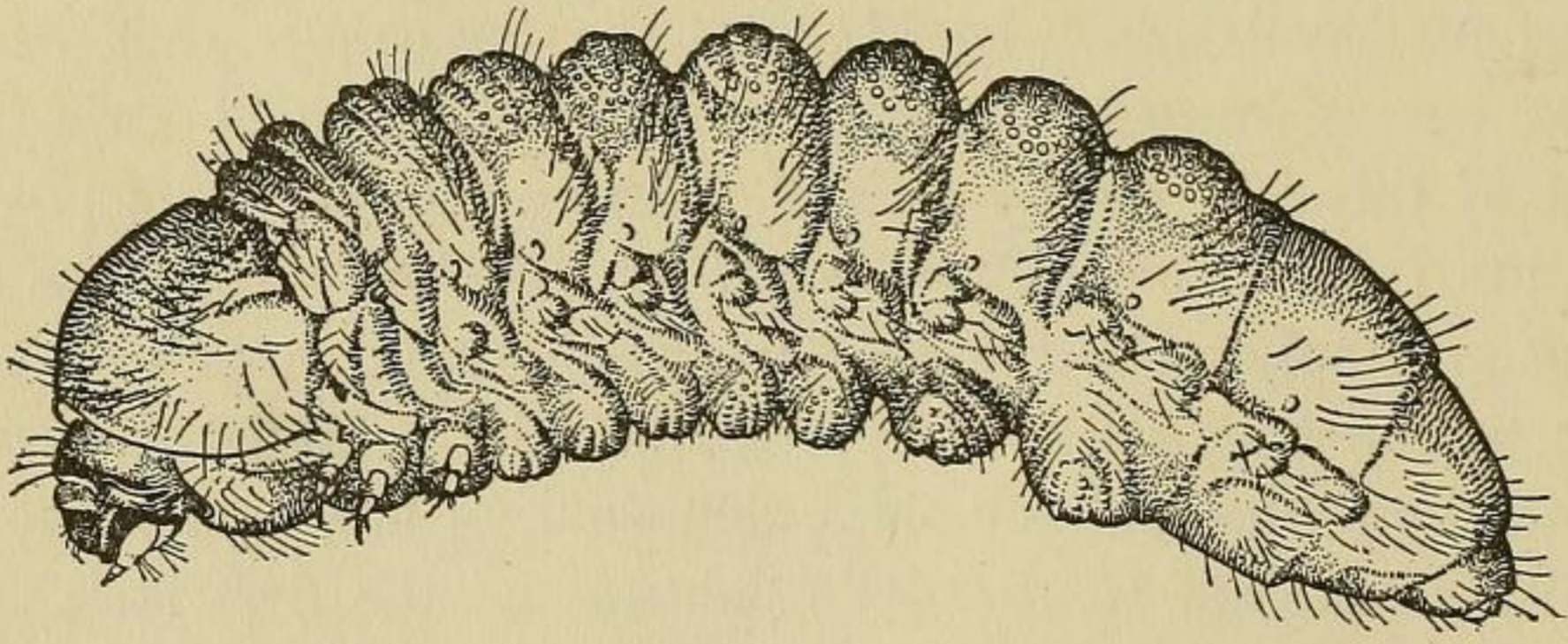
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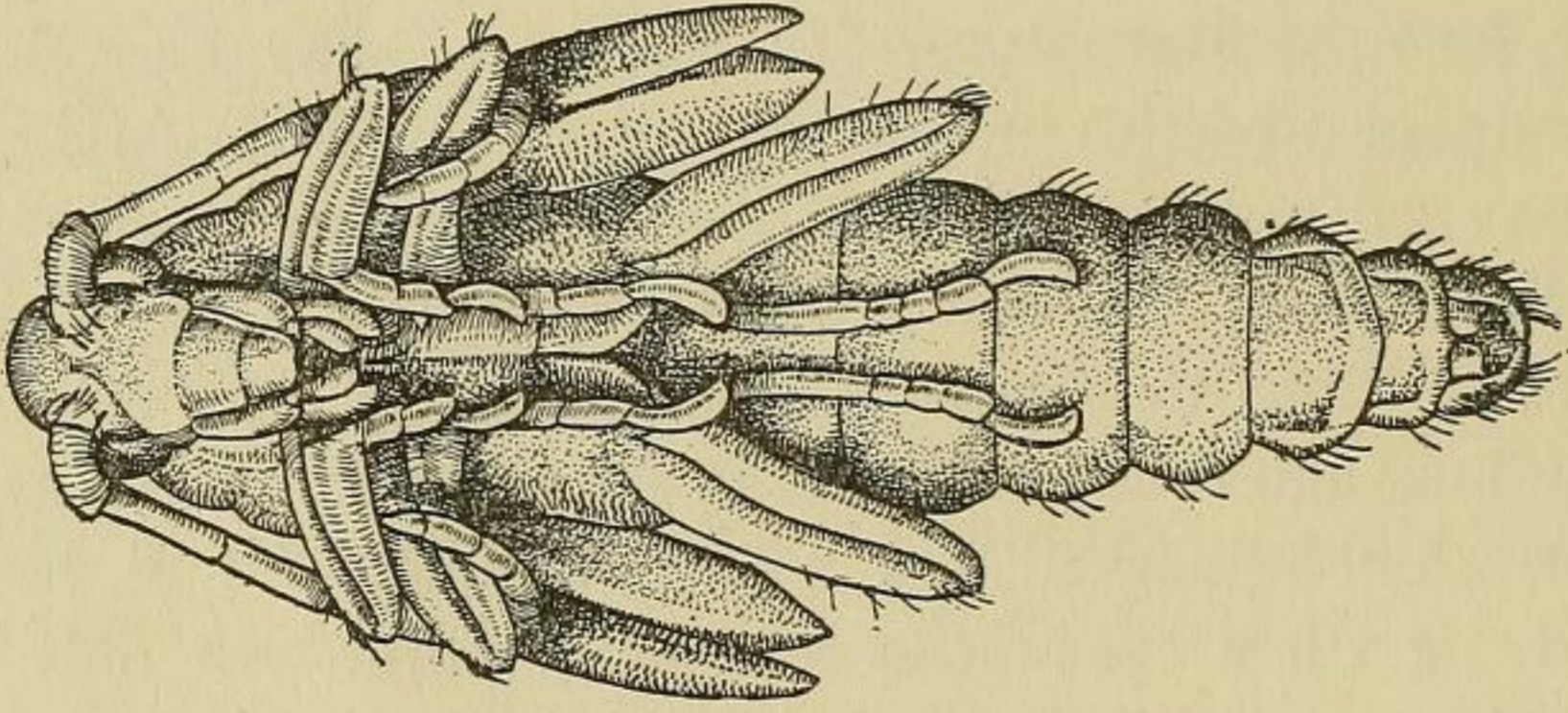
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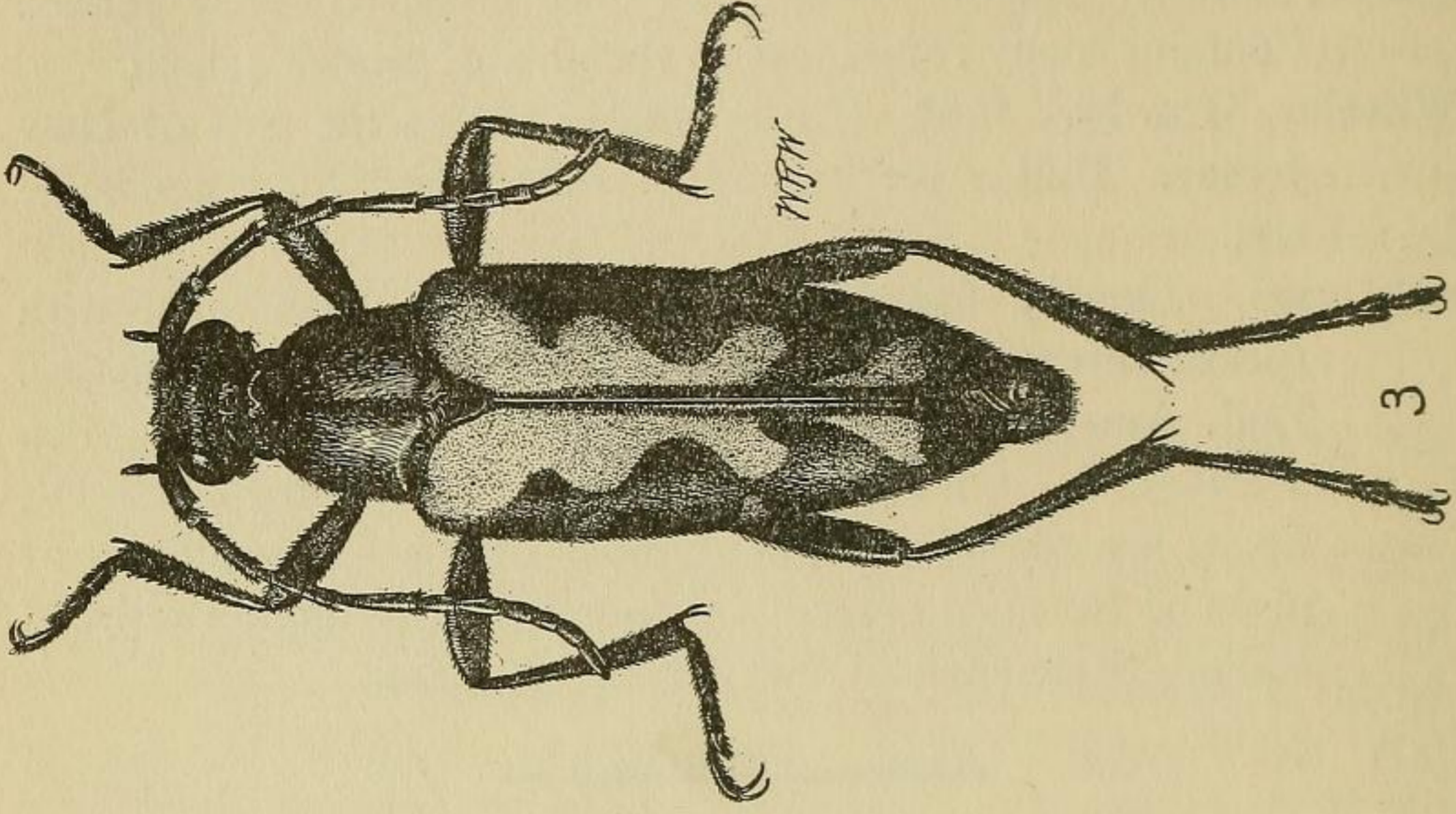
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Typocerus sinuatus, Newm.

OBSERVATIONS ON *TYPOCERUS SINUATUS* NEWMAN AS A FORAGE PLANT PEST.

BY J. S. WADE, Scientific Assistant, Bureau of Entomology.

The larval stage of *Typocerus sinuatus* Newman, of the Coleopterous family Cerambycidae, hitherto supposed to be of economic importance solely as a pest of forest trees, recently has become known to have potential possibilities as a grass pest in the central Great Plains region. The data here presented are based upon observations made by the writer and other assistants of the Bureau of Entomology in southern Kansas and northern Oklahoma, during the years 1913-14, upon the insect as a pest of the root system of *Andropogon scoparius* Michx.

Andropogon scoparius Michx., commonly known as Little bluestem, is abundant throughout the eastern United States, is a valuable forage grass, and forms part of the wild prairie hay in the eastern portion of the central Great Plains region. It has long been known as one of the favorite hibernating plants for the chinch bug, *Blissus leucopterus* Say. It was while pulling apart the roots of this grass in search of overwintering chinch bugs that the larvae of *Typocerus sinuatus* Newm. were first noticed to be quite numerous as pests thereon.

INJURY: The character of injury wrought by these insects consists of eating out the crown of the plants so that the stems break off just below the ground surface. On breaking apart the particles of earth found beneath bunches of infested grass, such particles appear to contain many fragments of the crown and roots of the plants, and present the same general appearance as do the burrows of other wood borers. The work of this insect may be distinguished from that of the various species of Crambidae by the presence in these burrows of the feces of the larvae. As many as five larvae often may be found boring into a single clump. Oftentimes they entirely eat away the base of the plants. The cutting away of the stems and destruction of the center of the root systems render the subsequent growth of the infested clumps stunted and scattered. While the larvae by preference appear most frequently to cut out the center of the plants, leaving only a rim of growth

around the outside, they also feed in, and at times hollow out, small cavities in the lower part of the stems. It is noticeable that they feed in late spring upon old rather than upon green stems. The extent of damage covers considerable areas in Kansas, noteworthy injury occurring in meadows and pastures in Sumner, Sedgwick, Kingman, Pratt, Ford, Meade, and Seward Counties, and in Oklahoma in Tulsa County.

HOST PLANTS: In addition to *Andropogon scoparius* Michx., the larvae of the insect also are occasionally found feeding upon the roots of *Sporobolus airoides* Torr., bunch grass; *Sorghastrum nutans* Linn., Indian grass; and *Agropyron smithii* Rydb., Colorado blue-stem. The adults also have been collected from *Dracopis amplexicaulis* Vahl; *Ratibida columnaris* Linn., cone flower; *Rudbeckia flava* Moore, Black-eyed Susan; *Aster* sp., Yellow aster; and *Linum lewisii* Pursh., Wild flax.

DESCRIPTIONS.

The egg stage of this insect was not observed.

The larva (Fig. 1) is of the usual cerambycid form, elongate, subcylindrical, somewhat wider just behind the head. It is cream color, with brownish head and yellowish-brown mouth parts. The intersegmental constrictions are deep and well defined, the segments wrinkled. The sides of the body are sparsely covered except on certain prominences with acutely pointed tubercles, in the end of each of which there is present a tiny seta. The segments slightly tapering from the prothorax to the caudal extremity. Ten brown spiracles along each side, the first spiracle largest. Little change of color occurs during the growth of the larva. Average length of living mature larva is 14.5 mm. Width at widest part just behind the head is 4 mm. In general shape the very young larva is very much like the mature larva. The larva is quite helpless when removed from the burrow.

The pupa (Fig. 2) is soft, white, and oval, with legs, wing pads, and antennae close to the body. Form slender, averaging 9 mm. in length by 2.5 mm. in width. Shortly before transformation to adult it becomes darker with brownish color.

The adult (Fig. 3) is a slender black beetle, 10 to 13 mm. in length, with rather dense yellowish pubescence. Thorax strongly convex, narrow in front and with sides rounded, elytra having large yellow spots, the three basal ones connected near suture, tips black and tapering behind.

LIFE HISTORY: In the latitude of southern Kansas the larvae of various sizes from 1 mm. to full-length larva overwinter in cells beneath the infested plants and do not feed during such periods. In the spring they early resume their activity. The feeding habits do not vary to any noticeable degree with the various stages of the larvae, though their size may affect their position in the host plants, many small larvae being found in hollowed-out lower portions of stems, whereas the larger larvae are always to be found down in the main burrows. The growth of the larvae is not rapid. The larger larvae discontinue feeding about the middle of April, pupate in tiny earthen cells about ten days thereafter, and the adults issue about 30 days thereafter, early in June. The eggs are probably deposited shortly thereafter, but the process of deposition and the length of the egg stage are not yet known. Larvae of widely varying size from very small to those nearly mature are often found together in the same clumps. There are indications that the length of the larval stage varies materially with the quantity and quality of the food supply, for it has been noticed that in burned-over clumps of grass, which afford less food, the growth of the larval stage becomes greatly retarded. Under such conditions there are indications of a life duration of two seasons from egg to adult. The burning of the dried grass in late fall or early spring does not greatly injure the larvae, only an occasional one being destroyed thereby. Such procedure would probably be of very slight value as a control measure. The adults are most commonly present in numbers on the grasses and near-by weeds during the month of June. They often crawl down into the grass clumps and probably deposit the eggs there. No adults are to be found in infested areas after July.

WANTED—More two- and three-line notes to fill in.—EDITOR.