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RECORDS OF A DODDER GALL-WEEVIL IN IOWA

HENRY LEE DEAN

Beguinet (1) early described the morphology and anatomy of galls induced on *Cuscuta* by species of *Smicronyx*, the genus containing the dodder gall-weevils. Yuncker (4) referred to swellings on stems and flower pedicels of dried herbarium material of *Cuscuta* and suggested that these galls were caused by an insect, then unidentified because of the condition of the specimens. Weiss and West (3) described galls from Monmouth Junction, New Jersey, on *Cuscuta cephalanthi* Englm. caused by the dodder gall-weevil, *Smicronyx sculpticollis* Casey. Gertz (2) reported galls from Sweden on the stems and flower pedicels of *Cuscuta europaea* L. caused by another species of dodder gall-weevil, *Smicronyx jungermanniae* Reich. This insect is described by Gertz as rare for Sweden and Scandanavia, but of common occurrence in Central Europe and Italy. Later, Yuncker (5) had occasion to examine numerous, fresh, insect-induced galls on *Cuscuta pentagona* L. collected near Lafayette, Indiana. He concluded that these swellings were caused by *Smicronyx sculpticollis*, and that galls previously found by him on dried specimens of *Cuscuta* resembled those induced by this species of insect.

Casey, according to Weiss and West, described *Smicronyx sculpticollis* from Indiana, Virginia and Texas. Blatchley and Leng, quoted by Weiss and West, state that this gall-weevil is known to occur also in New Jersey, Long Island, District of Columbia, Illinois, Kansas and Iowa.

The present paper reports the occurrence of a dodder gall-weevil in Iowa. Over a period of years the writer has found numerous insect induced galls, on several species of dodder and in various parts of the state. The summarized collection data follows.

1. Galls on *Cuscuta polygonorum* Englm., on banks of the Cedar River in the Palisades State Park, near Mount Vernon. August 17, 1931.
2. Galls on *C. polygonorum*, Iowa River flats near the Rifle Range, Iowa City, July 30, 1933.
3. Galls found at the same location as above and on the same species of *Cuscuta*, August 25, 1934.
4. Galls on *C. glomerata* Choisy, near Silver Lake, July 20, 1934.
5. Galls on *C. glomerata*, near East Okoboji Lake. July 22, 1934.
6. Galls on *C. glomerata*, near West Okoboji Lake. July, 1935. Collected by Professor R. B. Wylie.

These galls were broadly fusiform, oval, elongated or sub-globular in shape. Many were irregular in outline and a few were flattened by contact of the gall with the host plant of the dodder. The largest gall found measured 4.5 mm. in diameter and was 1.5 cm. in length. Numerous smaller and intermediate swellings occurred, but galls were always somewhat longer than wide. Galls were greenish-yellow to orange-red in color. Hundreds of galls may occur in one dodder bed while in other localities only a few swellings will be found.

Extending lengthwise in each matured gall is a large central cavity lined with irregular deposits of frass, and opening to the outside by one or more pores. Each opening is apparently caused by a larva making its way out through the wall of the swelling. As many as four larvae have been found in a single gall, two and three frequently occur, but more often only one is present in a swelling. No adult insects have been found in any gall, and since larvae are frequently found embedded at various depths in the wall surrounding the central cavity, apparently eating their way outward through this tissue, it is probable that they thus escape and fall to the ground where they pupate.

Weiss and West state that adult insects are frequently found inside these galls during the latter part of August, and that emergence is usually effected by the middle of September, or later, in central New Jersey. The fact that no adult insects have been found by the writer in any gall seems to indicate that either a different species of gall-inducing insect has been found in Iowa or that the behavior of *Smicronyx sculpticollis* may vary from that previously reported.

Hypertrophies induced by the dodder gall-weevil have a smooth, unbroken epidermis one layer of cells thick and overlaid by a film of cutin. The majority of the epidermal cells are uniform in size and shape, but large isolated cells are frequently found in this layer. No stomata were found.

Young galls, and terminal regions of older swellings, are composed of regularly shaped cells having no intercellular spaces. The middle region of older galls is made up of parenchyma with frequent, large, intercellular spaces. The cells in this region often have wavy walls. Isolated giant cells frequently occur in the parenchyma. Numerous compound starch grains are packed in the cells at the ends of the galls, but few are found in middle regions of the swellings.

Vascular bundles extend the length of younger galls, but devel-

oping larvae hollow out the central part of the swellings, thus obliterating all such tissues in that region.

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