

Additions to the *Coccoidea* or Scale Insects of Indiana (Homoptera)

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Five species of scale insects heretofore unreported from Indiana have been collected or identified by the author during the past four years. These additions to the Indiana fauna raise the total number of species reported from the state to seventy-three. Previously, sixty-eight species of scales have been reported by Douglas (1911), Dietz and Morrison (1916), Amos (1933), and Wallace et al. (1923). The new additions reported by the author are *Phenacoccus dearnessi* King¹, *Aonidomytilis solidaginis* (Hoke)², *Lepidosaphes yanagicola* Kuwana³, *Diaspidiotus liquidambaris* (Kot.)⁴, and *Unaspis euonymi* (Comst.)⁵.

The description, synonymy, known distribution hosts, and habitat of these five species are listed as follows:

1. *Phenacoccus dearnessi* King. 1901.

Synonyms: *Phenacoccus cockerelli* King. 1903.

Phenacoccus betheli Cockerell. 1912.

Description:

Adult Female:

Size: Variable 2.00 to 3.5 mm long, circular in outline.

Color: Dark red, dorsally covered with transverse bands of a sparse whitish secretion, margins with a short fringe of more or less confluent filaments.

Structural Characteristics: The following is the description of Ferris (1950): "Anal lobe cerarii with 5-10 short, stout, slightly lanceolate setae, these all of about the same size, accompanied by a few trilocular pores and set in a slightly sclerotized area. The remaining cerari of the abdomen contain an even greater number of similar setae, these forming a patch on the side of the body. Anterior to the abdomen these patches become irregular and toward the head can scarcely be distinguished as distinct cerarii. Scattered sparsely over the abdomen are setae similar in form, and in part equal to those of the cerarii. The dorsum bears numerous trilocular pores but no multilocular pores and no tubular ducts.

"Venter with a few multilocular pores which are concentrated in the region of the vulva and do not extend forward to the posterior circulus. Midregion from the anterior abdominal segments forward to the head with scattered, small, quinquelocular pores. A few small, tubular ducts are present, especially on the posterior segments of the abdomen and in the lateral areas.

1. Verified by Dr. Harold Morrison, Div. of Insect Identification, U. S. Dept. of Agr.

2. Determined by Dr. Harold Morrison, Div. of Insect Identification, U. S. Dept. of Agr.

3. Verified by Dr. G. F. Ferris, Stanford University.

4. Determined by Dr. Harold Morrison.

5. Determined by the writer.

"Two circuli present, both these circular or slightly oval and both quite small, the anterior one being smaller than the posterior. Antennae normally nine-segmented, quite short. Legs noticeably short but not especially stout, the claw with a distinct tooth."

The presence of two small circuli and large patches forming the cerarii make this species easily separable from others of the genus.

Hosts: Hawthorn (*Crataegus* sp.), Juneberry (*Amelanchier* sp.), Peach (*Amygdalus havardi*).

Distribution: A series of specimens from hawthorn were sent to the writer by P. T. Ulman from Indianapolis on June 30, 1952. This mealybug has already been reported from Ontario, Canada; Texas; Arizona; California; Colorado; Michigan; and now Indiana.

Habitat: The mealybug occurs primarily on the twigs and stems of the host, usually near the axil of a leaf. See figure 1.

2. *Aonidomytilis solidaginis* (Hoke)

Synonym: *Lepidosaphes solidaginis* Hoke

Description:

Adult female:

Size: Length 1.2 mm.

Color: The scale is elongate, pale brown or in part whitish because of a waxy bloom, exuviae is apical. Male scale similar in color and texture but about half the length of the female scale.

Structural Characteristics: Ferris (1937) described *A. solidaginis* as follows: "From the other species of *Aonidomytilis*, to which genus it is tentatively referred, it differs by the presence of gland spines on the margins of the second to fourth abdominal segments. Median pygidial lobes small and widely separated; second lobes well developed; third lobes represented by a pair of sclerotized points. Dorsal ducts somewhat smaller than the marginal ducts, comparatively few, scattered. Gland spines of the pygidium small, slender, each with a single duct. Perivulvar pores present in five small groups. Pygidium as a whole weakly sclerotized."

Hosts: *Hypericum* sp. (St. John's Wort) and *Solidago* sp. (Goldenrod).

Distribution: This species has previously been reported from Alabama, Mississippi, and now Indiana.

Habitat: This species occurs on the stem and twigs, usually under the curled edge of the exfoliating bark of hypericum. See figure 2.

Notes: This scale was found infesting *Hypericum* in a Lafayette, Indiana nursery by the writer, on November 14, 1951. This is the first report of this scale on *Hypericum* although G. F. Ferris of Stanford University writes "I have had it before from *Hypericum*." It is very difficult to detect as it is approximately the same color as the thin shreds of bark exfoliating from the small twigs. The scale apparently overwinters as a nearly mature female as no eggs could be found on any of the samples checked.

3. *Lepidosaphes yanagicola* Kuwana. 1925.

Description:

Adult Female:

Size: Length 2.066, width 0.539.

Color: Brown to dark brown, with grayish margins, old specimens gray. Exuviae orange yellow:

Structural Characteristics: Based upon the description of Kuwana (1925):

Scale is elongate, gradually widening posteriorly and convex. Body of female is elongate, not heavily chitinized, slightly narrow toward the anterior end, segmentation distinct; the margins of the abdominal segments not much produced. Pale white in color. Antennae with two short, curved hairs. Anterior parastigmatic glands six to eight. Each margin of the abdominal segments with many small ducts. The last three abdominal segments with a short spur on each margin. Penultimate segment with four gland spines on each margin.

Pygidium—Round, not chitinous. Median lobes large, rather widely separated, rounded somewhat sloping and crenulate; second lobes small, duplex, crenulate, the outer lobules much smaller and sometimes wanting; third lobes wanting. Gland spines rather small and arranged as follows: two between the median lobes, two between median and second lobes, two laterad of second lobes, two beyond these, and two or three additional laterad of this pair. Marginal glands, one laterad of the median lobe, two laterad of the second lobe, two laterad of the fourth pair of gland spines and one laterad of the fifth pair of gland spines. Anal opening close to the base of the pygidium. Circumgenital glands in five groups, the median 6-10, anterior laterals 11-19, posterior laterals 11-18. Dorsal gland orifices rather few and small.

Hosts: *Euonymus alatus* and its varieties; reported on species of *Salix* (willow) in Japan and Russia.

Distribution: Ohio, Indiana, Japan and Russia.

Habitat: Found on the twigs between the corky ridges, see figure 3.

Overwinters as an immature female. Egg disposition begins in June. Apparently there are two generations with second brood eggs deposited in late August and early September.

Notes: In 1950 this scale was found in Ohio by Neiswander, (1953).

It was found in several Indiana nurseries by John Favinger and Jim Clark of the State Entomologist's office and in a private planting by the writer.

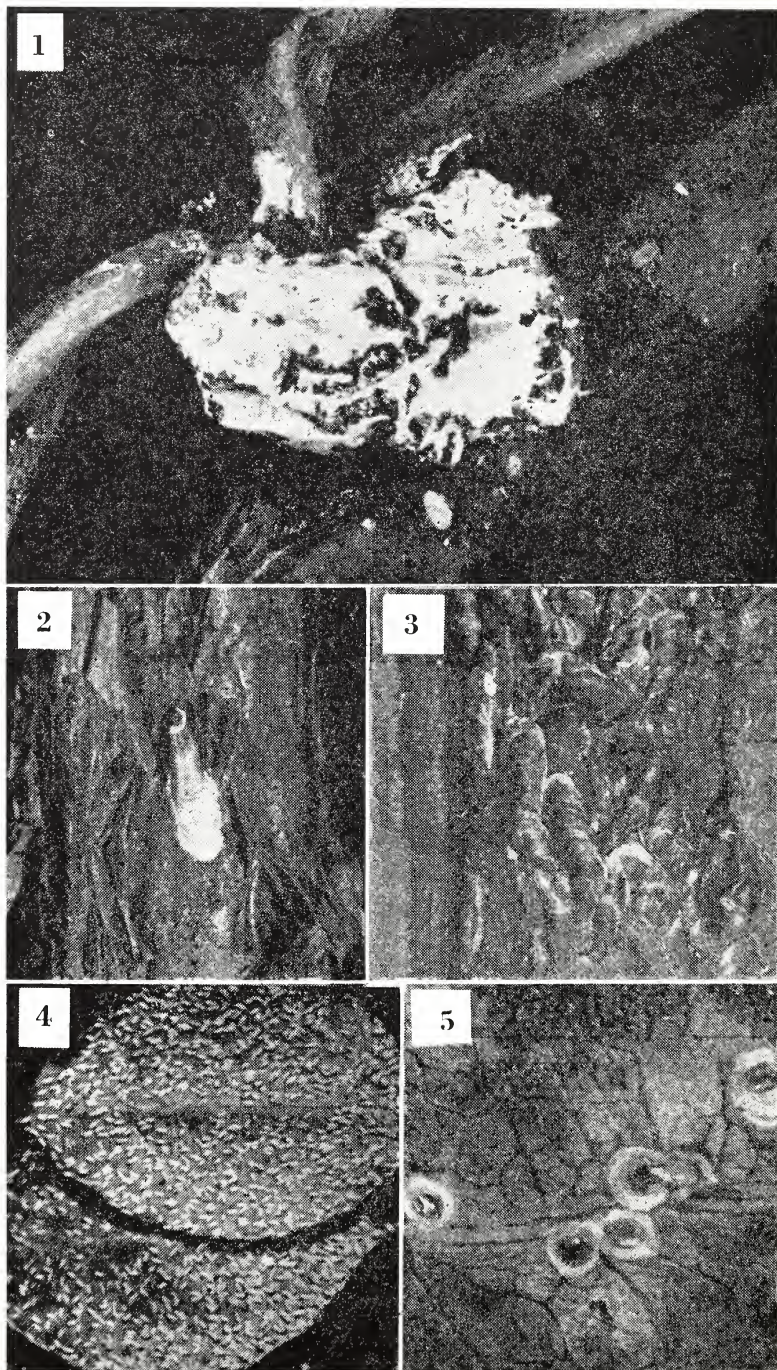
4. *Unaspis euonymi* (Comstock)

Synonym: *Chionaspis euonymi* Comstock.

Description:

Adult Female:

According to Ferris (1937), "Readily separable from *U. citri* (Comstock), the only other species of the genus known to occur in North America, by the presence of five small groups of perivulvar pores and the lack of sclerotization of the derm of the thorax and first abdominal segment."



Hosts: *Euonymus americanus*, *E. atropurpureus*, *E. europeus*, *E. japonicus* and varieties, *E. latifolius*, *E. radicans* and varieties. Also on *Althea* spp., *Celastrus* sp., *Syringa* spp. and *Pachysandra terminalis*, according to Boyd (1945). It is serious pest in Indiana on Bigleaf Winter Creeper *E. fortunei* (*radicans*) var. *vegetus* on which it has been collected repeatedly by the writer during the past four years.

Distribution: According to Ferris (1935): "Undoubtedly introduced into North America from Japan." Also reported from Cuba, France and Italy. It is widespread in the United States, apparently occurring wherever its hosts are found and having been reported from Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Ohio, Michigan, Missouri, Texas, Mississippi, California, and now Indiana.

Habitat: The conspicuous white males occur primarily on the leaves while the gray, oyster shell-like females occur primarily on the stems and twigs. See figure 4. Heavy infestations cause the leaves to yellow and the plant dies unless control measures are applied.

5. *Diaspidotus liquidambaris* (Kotinsky)

Synonyms: *Cryptophyllaspis liquidambaris* Kotinsky.

Chemnaspidiotus liquidambaris (Kotinsky).

Description:

Adult Female:

Size: .6 mm in length.

Color and description: Scale flat, white, exuviae central. (Male scale is white, elongate oval, exuviae toward one end.)

Structural Characteristics: The following description is that of Ferris (1938):

"Cephalothoracic region tending to become quite heavily sclerotized at maturity. Perivulvar pores lacking. Median lobes prominent, parallel, separated by nearly half the length of one lobe and with a pair of plates between. Second lobe represented by a long, hyaline, plate-like process and the third lobe with a similar process. Plates well developed, present as far as the seta which marks the fifth segment, slender, simple or variously toothed or fimbriate. Intersegmental marginal sclerites moderately developed. Dorsal ducts relatively few, slender, not present on the fourth and preceding segments except for occasionally one or two ducts on the

Figure 1. *Phenacoccus dearnessi* King. Woolly mass produced by adults at node of hawthorn twig. Note the two small crawlers.

Figure 2. Adult female *Aonidomytilis solidaginis* (Hoke). On hypericum twig.

Figure 3. Many *Lepidosaphes yanagicola* Kuwana. Clustered on *Euonymus alatus* twig.

Figure 4. *Euonymus* scale, *Unaspis euonymi* (Comst.). On leaves of big leaf wintercreeper. The white scales on the leaves are males.

Figure 5. *Diaspidotus liquidambaris* (Kot.). On lower surface of a sweet gum leaf.

fourth segments and small ducts on other segments at the margin. Anal opening slightly less in diameter than the length of the median plates and removed from their base by about twice this diameter." See plate III.

Hosts: Sweet Gum (*Liquidamber styraciflua*), "red maple," "maple," and magnolia.

Distribution: Recorded from the District of Columbia, Georgia, Mississippi, Florida, Texas, Louisiana and now Indiana.

Habitat: On sweet gum this species causes a pit gall on the leaves.

Each gall is capped by a single female scale. See figure 5.

Notes: This species was collected on sweet gum at Indianapolis, Indiana by P. T. Ulman of the State Entomologist's office.

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