

THE SECOND INSTAR MALES OF THREE SPECIES OF
FIORINIA (HOMOPTERA: DIASPIDIDAE)¹

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ABSTRACT

The second instar males of *Fiorinia externa* Ferris, *F. pinicola* Maskell, and *F. theae* Green are described. These species are conspicuously sexually dimorphic in the second instar.

Key Words: Coccoidea, Diaspididae, scale insects, *Fiorinia*, description.

The sexes in the immature stages of the Diaspididae were generally believed to be practically identical until Boratynski (1953) showed some conspicuous differences between the sexes of the second instar of *Aulacaspis* and *Chionaspis*. Takagi and Kawai (1967) in suppressing the genus *Phenacaspis*, utilized second instar male characteristics as part of the criteria for the reassignment of the species included in that genus. In a later paper, Takagi (1969) elaborated on the importance of the second instar males in phylogenetic studies. He also reported striking sexual dimorphism in the second instar of quite a few genera in the tribes Rugaspidiotini, Odonaspidini, and Diaspidini. Although sexual dimorphism in the second instar has been reported in a number of genera, only a few (perhaps less than 10) descriptions of specific dimorphic second instar males exist.

Although Takagi (1969) reported that sexual dimorphism occurs in the genus *Fiorinia*, there is not a published description of the second instar male of any of the species. My examinations of the second instar of *Fiorinia externa* Ferris, *F. pinicola* Maskell, and *F. theae* Green revealed not only sexual dimorphism but also that the second instar males have more specific differences than do the adult females. Descriptions of the second instar males of the above species follow.

GENERAL CONSIDERATIONS

Unfortunately, the available material of *F. fiorinae* Targ. is from a unisexual race; therefore, no comments can be made on the type species. As represented in our material, the second instar males of *Fiorinia* possess 2 types of modified macroducts which may be characteristic of the genus. One type, termed "clusters of ducts" by Takagi and Kawai (1967), occur in a dorsal submarginal or marginal position on the pygidium and in 1 species on a pre-pygidial segment in compact groups of 6 to 24 (Fig. 3D). The individual ducts of these clusters are not highly modified but are conspicuously short and broad and their orifices are provided with ragged, spine-like processes. The latter are visible only when a specimen is mounted in such a position that the spines extend beyond the body margin and are seen in outline. The other type of ducts (here termed "communal ducts") occur in a marginal position on the

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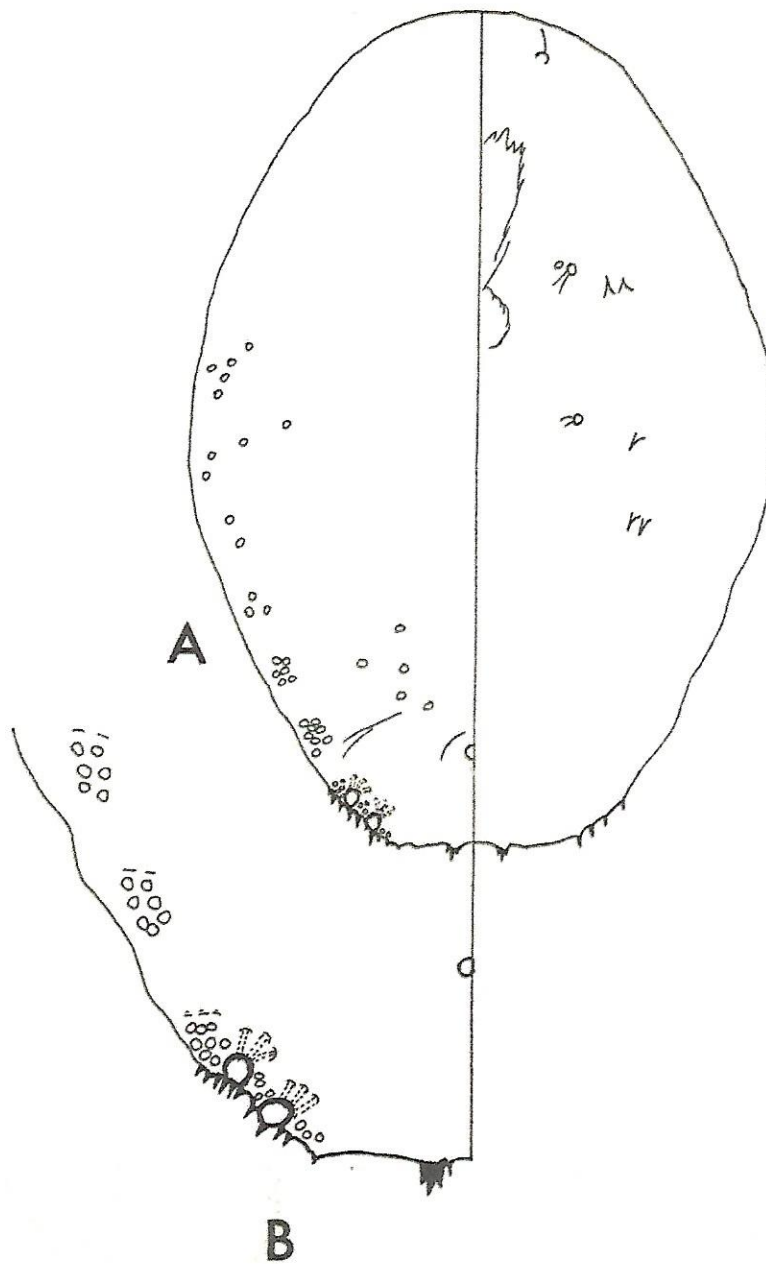


Fig. 1 — *Fiorinia externa* Ferris second instar male; A, general features; B, margin of pygidium.

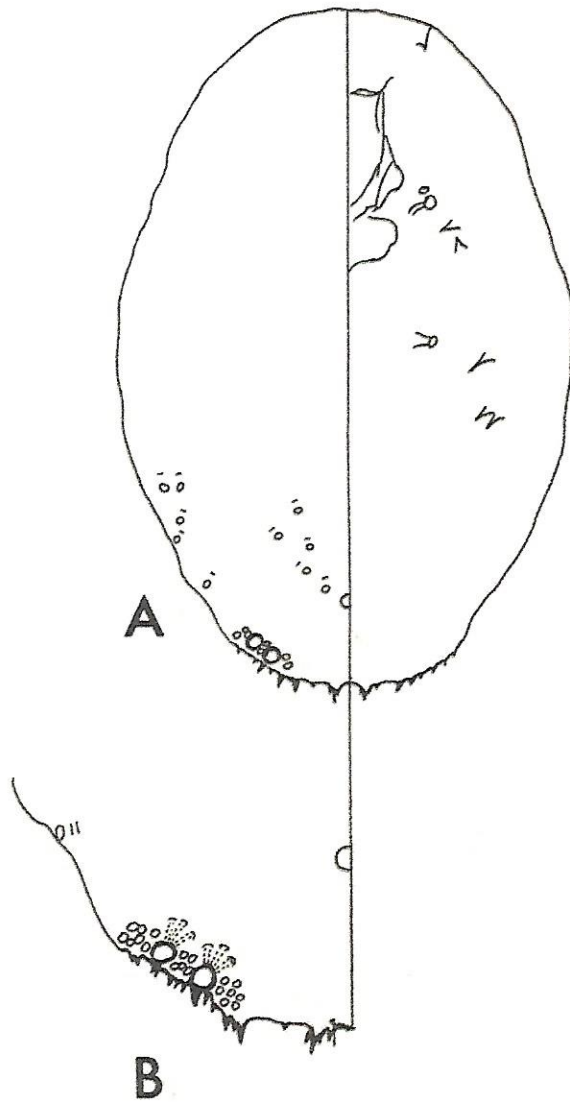


Fig. 2 — *Fiorinia pinicola* Maskell second instar male; A, general features; B, margin of pygidium.

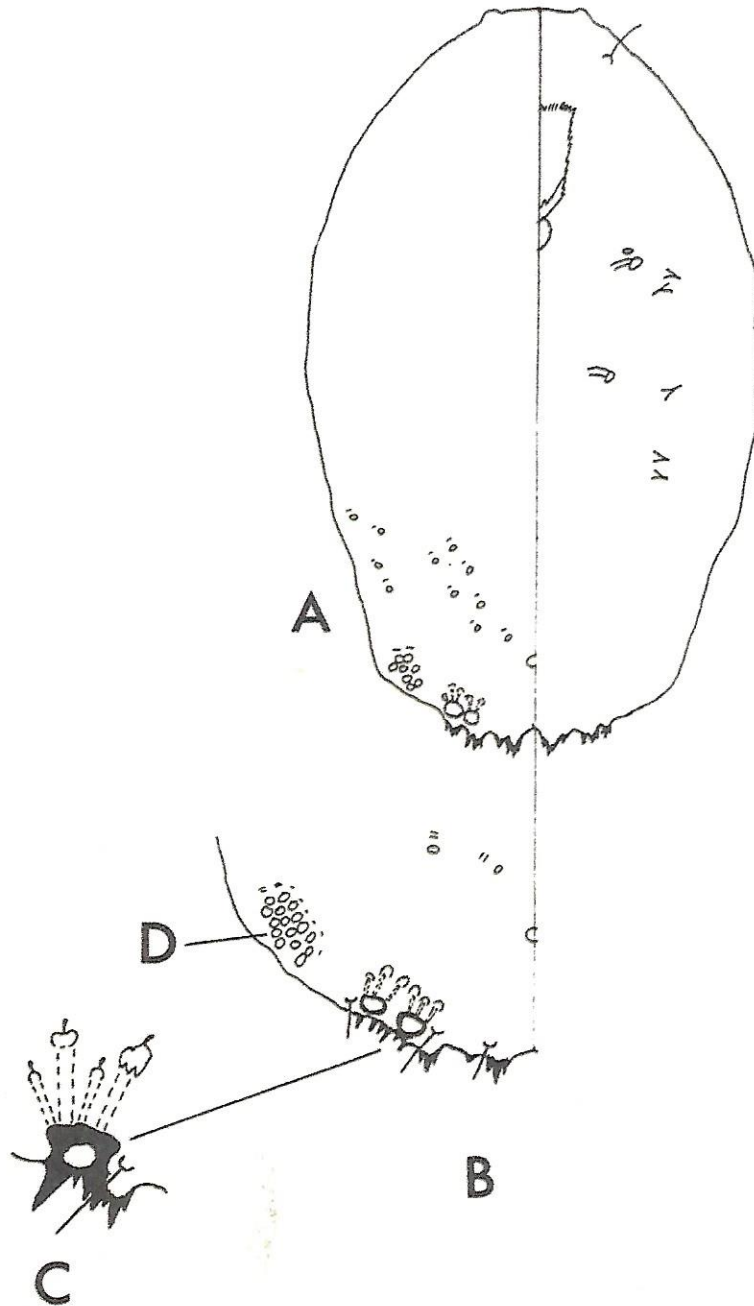


Fig. 3—*Fiorinia theae* Green second instar male; A, general features; B, margin of pygidium; C, communal ducts; D, cluster ducts.

6th and 7th segments (Fig. 3C). They consist of a relatively large orifice which is shared commonly by 4 elongate ducts, the inner extremities of which are slightly modified from the 2-barred form. The orifice is heavily sclerotized and is provided with large spin processes.

Segmentation of the abdomen is extremely obscure and references to specific segments should be considered as approximations.

Fiorinia externa Ferris 1942, Fig. 1

Synonyms: none.

Descriptive figure of second instar female: Ferris 1942: 393.

The second instar male: Length on slide 0.45 mm. Shape elongate-oval. Segmentation obscure. Median lobe reduced to a ragged plate-like process. Second and third lobes absent or not distinguishable from the processes of the duct orifices. Communal ducts present on segments 6 and 7 and surrounded by a large group of cluster ducts. A group of about 6 cluster ducts on segment 4 and about 8 on segment 5. Dorsal macroducts present on prosoma and prepygidial abdominal segments as in Fig. 1. Absent in the pygidial area. Gland spines located ventrally as in Fig. 1.

Described from specimens on *Tsuga* from Baltimore, Maryland, received through the courtesy of John A. Davidson.

Fiorinia pinicola Maskell 1897, Fig. 2

Synonyms: *Fiorinia juniperi* Leonardi

Descriptive figure of second instar female: Kuwana 1925.

The second instar male: Length on slide 0.40 mm. Shape elongate-oval. Body segmentation obscure. Median and second lobes reduced to ragged plate-like processes. Third lobes entirely lacking. Communal ducts present on the 6th and 7th segments, surrounded by a group of about 24 cluster ducts. No other cluster ducts present. Dorsal macroducts few, arranged as in Fig. 2. Gland spines present in the same positions as in *F. externa*.

Described from specimens on *Ficus pumila*, Cumberland Island, Georgia, collected by Ramona J. Beshear.

Fiorinia theae Green 1900, Fig. 3

Synonyms: *Fiorinia fioriniae* var. *camelliae* Comstock

Descriptive figure of second instar female: Ferris 1942.

The second instar male: Length on slide 0.40 mm. Shape elongate-oval. Communal ducts present on the 6th and 7th segments, entirely without cluster ducts in this position. A group of about 20 cluster ducts on the 5th segment. Otherwise quite similar to the above described *F. pinicola*.

Described from specimens on *Camellia japonica*, Spalding Co., Georgia, collected by H. H. Tippins.

REMARKS

The general appearance of the second instar males described above are quite similar but they may be separated by the following key:

1. Communal ducts surrounded by a large group of cluster ducts2
- Cluster ducts entirely lacking in the area of the communal ducts*F. theae*

2. Two groups of cluster ducts present anterior to the communal ducts *F. externa*
Cluster ducts entirely lacking except for those associated with the communal ducts *F. pinicola*
References prior to 1957 are to be found in Morrison and Renk 1957.

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