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Author(s)	Takagi, Sadao; Yamamoto, Masamune
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TWO NEW BANANA-INFESTING SCALE INSECTS OF  
HEMIBERLESIA OR ABGRALLASPIS FROM  
ECUADOR (HOMOPTERA : COCCOIDEA)

By SADAO TAKAGI and MASAMUNE YAMAMOTO

*Abstract*

TAKAGI, S. and YAMAMOTO, M. 1974. Two new banana-infesting scale insects of *Hemiberlesia* or *Abgrallaspis* from Ecuador (Homoptera: Coccoidea). *Ins. matsum. n.s.* 3: 35-42, 2 tabs., 2 figs.

*Hemiberlesia musae* n. sp. and *H. ocellata* n. sp. are described from Ecuador on the basis of material taken on bananas imported into Kôbe Port, Japan, in 1963 and 1971. They fall in the limits of *Abgrallaspis*, but are included within *Hemiberlesia* interpreted in a broad sense. *H. musae* is compared with *Hemiberlesia* [*Abgrallaspis*] *cyanophylli*, *H. [A.] gliwicensis*, *H. [A.] corporifusca* and *H. [A.] pictor*. *H. ocellata* is unique by having peculiar ductiferous tubercles on the pygidial ventrum.

*Authors' addresses.* TAKAGI, S.: Entomological Institute, Faculty of Agriculture, Hokkaidô University, Sapporo, 060 Japan. YAMAMOTO, M.: Kôbe Plant Protection Station, Sinkô-tyô 3, Ikuta-ku, Kôbe, 650 Japan.

*Contents*

Introduction .....	37
Descriptions	
<i>Hemiberlesia [Abgrallaspis] musae</i> n. sp. ....	37
<i>Hemiberlesia [Abgrallaspis] ocellata</i> n. sp. ....	40
References .....	42

## INTRODUCTION

The two species given below were found at quarantine at the port of Kôbe, Japan, on bananas imported from Ecuador. They fall within the limits of *Abgrallaspis* defined in a recent work (Komosińska 1969), whereas they agree with none of the species revised in that work, so that they should be described as new species.

The genus *Abgrallaspis* was erected by Balachowsky (1948) as a segregation from *Hemiberlesia*, and has been accepted as valid by authors. However, its limits seem to be not clear; as stated by Komosińska there are known various species intermediate between *Abgrallaspis* and other genera. Another problem is more serious and concerned with the variable nature of the second lobes of the pygidium within the same species, whereas the state of the second lobes has been adopted in separating *Abgrallaspis* from allied genera. The published studies on this variation are still few, yet arouse doubts as to the distinctness of certain genera, especially between *Diaspidiotus* (sensu authors) and *Abgrallaspis*.

Except for the state of the lateral lobes of the pygidium, which may be liable to variation as stated, the differences between *Hemiberlesia* and *Abgrallaspis* lie in the enlarged anal opening and filiform macroducts of the former, and in these characters two species referred by Komosińska to *Abgrallaspis* show close resemblances to *Hemiberlesia*. At the present state of our knowledge it is not more than provisional either to take *Hemiberlesia* in a broad sense or to separate the two genera. The definition of *Hemiberlesia* given by Ferris (1938) may still be reasonable and is here adopted.

The specimens of the new species are deposited in the collection of the Entomological Institute, Hokkaidô University.

## DESCRIPTIONS

*Hemiberlesia* [*Abgrallaspis*] *musae* n. sp.

(Fig. 1)

Diagnosis. Body ca. 1.5 times as long as wide; derm remaining membranous in prepygidial region, weakly sclerotized in pygidium. Pygidium rather acute, with margin little convex except in abd. iv. Median lobes parallel, a little longer than or as long as wide (with basal part intruded into pygidium excluded), deeply notched once on either side, strongly convex beyond the notches, separated from each other by a little less than 1/3 width of one of them. Second lobes much smaller, yet well represented, longer than wide, with a distinct notch on outer side, the outer margin sloping towards apex beyond the notch. Third lobes much reduced in size, but distinct and strongly sclerotized, narrow, with a notch on outer side, the apex pointed. Plates of interlobar spaces fimbriate, surpassing second lobes in length; laterally to third lobe three plates

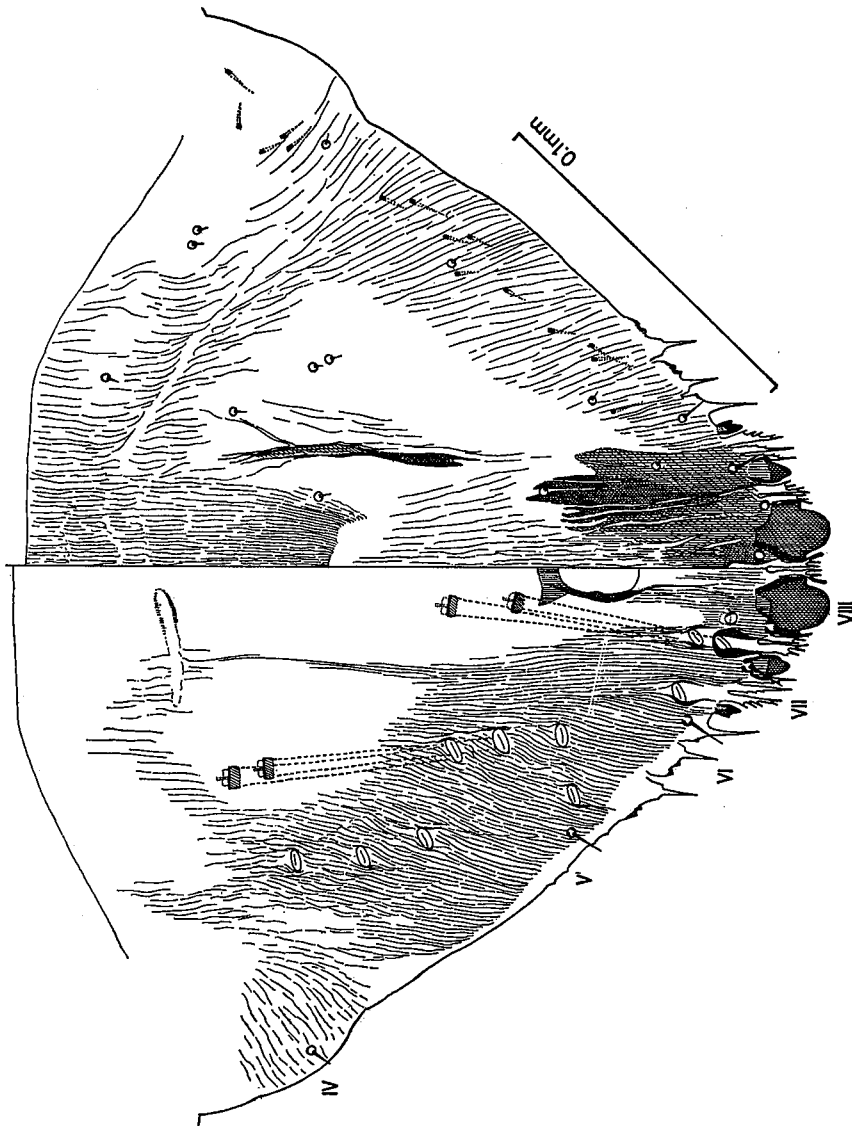


Fig. 1. *Hemiberlesia musae* n. sp., pygidium.

are slender and simple, with the base abruptly broadened and roughly dentate. Anal opening elliptical, comparatively large, longer than median lobe, removed from bases of median lobes by a distance ca. 1.5 times as long as its length. Perivulvar disc pores absent. Dorsal macroducts of pygidium cylindrical, well elongate, nine or 10 in number on one side: absent between median lobes; two ducts near margin between abd. vii and viii (between median and second lobes), one of them is enclosed by a pair of well-developed paraphyses, and the other by another pair of much slenderer scleroses just anteriorly; one near margin

between abd. vi and vii (between second and third lobes), enclosed by a pair of slender paraphyses, anteriorly at a distance with two or three in a single row along supposed border of abd. vi-vii; the same along supposed border of abd. v-vi, but the paraphyses associated with the marginal duct are much reduced or practically obsolete. Abd. iv without dorsal ducts. Prepygidial dorsal macroducts much smaller than pygidial macroducts, ca. 1/5 as long as the latter, occurring along margin, two on each of mesothorax to abd. ii, and one on abd. iii. Prosomatic tubercles distinct, conical, and sclerotized.

Material. Four adult females, from Guayaquil, Ecuador, May and June, 1963, M. Yamamoto and Y. Karimata.

The specimens other than the holotype seem to be fully grown, having embryos within the body; they measure ca. 1.2-1.3 mm in length and ca. 8.5-9 mm in width. Measures for pygidium, anal opening, postanal distance and lobes are given in Table 1. Third lobes ca. 8-9 micra long and ca. 3-4 micra wide; in two examples of antennae with a straight seta the tubercle measures ca. 8 micra in height and the seta 28 micra in length in one example, and ca. 5 and 30 in the other; prosomatic tubercles mostly ca. 8 micra long; dorsal macroducts between abd. vii and viii ca. 63 micra long.

Table 1. Measures in micra for some features of *Hemiberlesia musae* n. sp.

	Specimen 1 (Holotype)	Spm. 2	Spm. 3	Spm. 4
Pygidium:				
length; width	225 ; 310	225 ; 300	220 ; 325	210 ; 300
Anal opening:				
length; width	23 ; 14	23 ; 15	23 ; 14	23 ; 15
Postanal distance	35	38	35	35
Median lobes:	{16 ; 15	18 ; 16	—	16 ; 15
length; width	{16 ; 16	18 ; 15	16 ; 15	15 ; 15
Second lobes:	{13 ; 7	13 ; 8	13 ; 7	10 ; 8
length; width	{11 ; 6	13 ; 8	13 ; 7	11 ; 8

Pygidial width=distance between anterolateral corners of abd. iv; postanal distance=distance between posterior margin of anal opening and inner basal corners of median lobes; length of median lobes=distance between apex and level of outer basal corner.

Remarks. This species resembles *Hemiberlesia cyanophylli*, which was originally described by Signoret from France and now is a well-known pest in greenhouses and in warm regions of the world. In the following lines are given main differences between the two; the characters of *cyanophylli* are mainly based on the study by Balachowsky (1948), who examined many specimens originated not only in France but also at other parts of the world.

1) Perivulvar disc pores. Absent in *musae*, whereas four groups of perivulvar disc pores are present in *cyanophylli*. (In *cyanophylli*, however, these pores are few in number, 2-5 in the anterior group and 3-7 in the posterior.)

2) Dorsal macroducts of pygidium. The same in arrangement, but in *cyanophylli* more numerous between abd. vi and vii (6–8 in number), and one macroduct is present between the median lobes.

3) Plates. In *musae* three simple plates occur laterally to the third lobe; in *cyanophylli* six or seven plates occur in that position and are often fimbriate, though outer two or three are more or less reduced.

4) The pygidium is narrower and, in accord with this, the anal opening is elongate in *musae*.

All these differences, except for the absence of perivulvar disc pores, are rather not remarkable, and as to the first three features the characters of *musae* are reductive.

This species is very close to and almost coincident in the pygidial fringe with *Hemiberlesia* [*Abgrallaspis*] *glivicensis* described by Komosińska (1965) from greenhouses in Poland, but is distinguishable by lacking perivulvar disc pores and by some minor differences. It is also similar to *Hemiberlesia* [*Abgrallaspis*] *corporifusca* and *Hemiberlesia* [*Abgrallaspis*] *pictor*, described by Chiesa Molinari (1963) from Argentina and by Williams (1971) from a nursery in England, respectively, but may be distinguishable from the latter two by the character of the macroducts.

*Hemiberlesia* [*Abgrallaspis*] *ocellata* n. sp.

(Fig. 2)

Diagnosis. Body broadly pyriform, a little longer than wide. Derm remaining membranous in prepygidial region. Pygidium broad, roundish on margin, abd. iv well lobed out laterally. Median lobes strongly sclerotized, weakly divergent, a little sunken at their mesal bases, robust, as wide as or a little wider than long, tricuspid, being deeply notched subapically on each side and with the median cusp produced and rounded. Second lobes much smaller, but well developed, robust, with a deep subapical notch on outer side, the apex conical. Third lobes much reduced in size, rather spiniform, apically produced into an unsclerotized, acute process. Plates fimbriate in interlobar spaces, quite short and much retracted between median lobes; four plates simple, slender and mostly much elongate laterally to third lobe. Anal opening nearly rounded, about as long as median lobe, removed from bases of median lobes by a distance more or less longer than its length. Perivulvar disc pores absent. Perivulvar scleroses well developed. Dorsal macroducts reduced in size, but on pygidium a little larger than ventral microducts, mostly arranged in single intersegmental rows; one between median lobes; three in intersegmental furrow between median and second lobes, enclosed by thickly sclerotized margins of the furrow, the posteriormost further surrounded by a slender sclerosis; 6–8 in intersegmental furrow between abd. vi and vii, the posteriormost surrounded by a thick sclerosis; one or

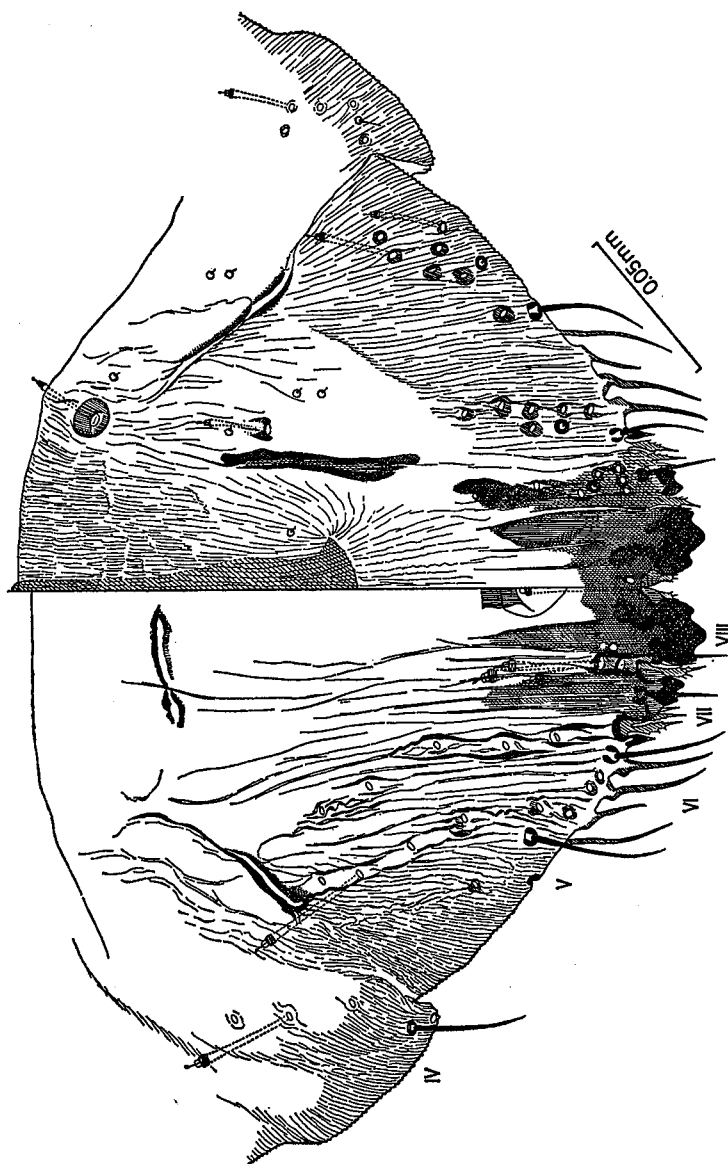


Fig. 2. *Hemiberlesia ocellata* n. sp., pygidium.

two near margin on abd. vi; 5-7 in intersegmental furrow between abd. v and vi; about two or three on abd. v; about four on lateral lobe of abd. iv; several similar dorsal ducts occurring on each of preceding three segments submarginally, but hardly distinguishable in size from ventral microducts. Dorsal ducts of another type, quite short and small, in a loose submarginal cluster on each of mesothorax to abd. iii. Ventral microducts clustered submarginally on abd. iii-vii, those on abd. v-vii with a sclerotized ring of derm around the orifice. A

remarkable rounded process is found submedially on ventrum of abd. iv, broadly depressed on the apex, on which one duct is open; one or two similar but much smaller and deformed processes on supposed abd. v just laterally to perivulvar sclerosis. Marginal setae much elongate around body. Prosomatic tubercles conical and sclerotized, or not discernible. Antennae with a rather short seta.

Material. Two adult females from Ecuador, 25-vii-1971, Y. Nishiwaki.

The holotype is 1.0 mm long and 8.5 mm wide; the other specimen is larger, 1.3 mm long and 1.0 mm wide, and seemingly fully grown. Measures for pygidium, anal opening, postanal distance and median and second lobes are given in Table 2. In the holotype the antennal tubercles are ca. 7 or 8 micra high, with the seta ca. 13 or 15 micra long; dorsal macroduct between median lobes 33 micra long and ca. 2.5 micra wide; ventral tubercle on abd. iv ca. 10 micra in longest diameter.

Table 2. Measures in micra for some features of  
*Hemiberlesia ocellata* n. sp.

	Specimen 1 (Holotype)	Spm. 2
Pygidium: length; width	205 ; 365	215 ; 425
Anal opening: length; width	20 ; 18	15 ; 15
Postanal distance	23	38
Median lobes: length; width	[18 ; 20 18 ; 20	18 ; 23 20 ; 20
Second lobes: length; width	[13 ; 9 12 ; 8	14 ; 12 12 ; 5

Pygidial length and postanal distance as in Table 1; length of median lobes=distance between apex and level of inner basal corner.

Remarks. None close to the present species has been found among the species of *Hemiberlesia* and *Abgrallaspis* in the works by Ferris, Balachowsky and Komosińska. This species is well characterized by having divergent median lobes, much elongate plates laterally to the third lobes, peculiar ductiferous tubercles on the pygidial ventrum, and much elongate marginal setae. In other respects this species is referable to *Abgrallaspis*.

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