

## Scientific Note

# *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae) in *Piper* species (Piperaceae) in state of Pará, Brazil

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**Abstract.** We report the occurrence of scale insect *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae) in two *Piper* species (Piperaceae). *Hemiberlesia lataniae* specimens were collected from leaves and stems of *Piper cernuum* Vell. and *Piper reticulatum* L., in a greenhouse, in the city of Belém, state of Pará. The species is reported for the first time within *Piper* species in Brazil.

**Keywords:** armored scale insects, pepper, phytophagous.

The Piperaceae family is represented in Brazil by 467 species (Guimaraes et al. 2022) and hosts species of the genus *Piper* (Piperaceae), which that have potential medicinal, food, flavoring, ornamental, insecticidal, and spice (*Piper nigrum* L. [black pepper]) applications (Rodrigues et al. 2019).

The main insects that can compromise *P. nigrum* in Brazil are the vine borer or black pepper weevil (*Lophobaris piperis* Marshall, 1930 - Coleoptera: Curculionidae), aphids (*Aphis spiraecola* Patch, 1914 and *Aphis gossypii* Glover, 1877 - Hemiptera: Aphididae), and scale insects (*Pseudococcus elisae* Borchsenius, 1947 - Hemiptera: Pseudococcidae and *Protopulvinaria longivalvata* Green, 1909 - Hemiptera: Coccidae) (Lemos 2014).

In Pará state, the following insects have been found in *P. nigrum* plants: *Aleurodicus coccois* (Curtis, 1846) (Hemiptera: Aleyrodidae), *A. spiraecola*, *Epitrix* sp. (Coleoptera: Chrysomelidae), *Eucalymnatus* sp., *P. longivalvata*, *Saissetia* sp. (Hemiptera: Coccidae), *Litostylus juvenis* Mshl., 1922 and *L. piperis* (Coleoptera: Curculionidae), and *Pseudococcus* sp. (Hemiptera: Pseudococcidae) (Caldeira & Vieira 1938; Sefer 1961; Silva 1977; Stein et al. 1995; Celestino Filho et al. 2004).

Among the scale insects reported on *P. nigrum* in Pará, *P. longivalvata* is considered one of the most important pests, with its population covering a large area of the leaf blade, in addition to favoring the growth of the fungus *Capnodium* Mont. (Capnodiaceae) (causing sooty mold on the leaves) reducing the photosynthetic surface of the leaves and, consequently, impairing the development and decreasing the productivity of the plants (Celestino Filho et al. 2004; Lemos 2014).

In April 2022, scale insects specimens were collected during observations in native Amazonian *Piper* species kept in pots in a greenhouse, which are part of the Piperaceae collection of Embrapa Amazônia Oriental in the city of Belém (01°27'S; 48°30'W, 10 m), Pará state. The samples were examined under a stereomicroscope and parts of leaves with specimens of the scale insects were preserved in 70% ethanol. Species identification was based on the descriptions of morphological characteristics of adult females, and keys for separation of genera and species (Ferris 1938; Claps & Wolff 2003; Miller & Davidson 2005).

The scale insects are identified as *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae). *Hemiberlesia lataniae* specimens were collected from *Piper cernuum* Vell. and *Piper reticulatum* L. species. The

insects were present on the abaxial and adaxial surfaces of the leaves and on the stems of the plants (Fig. 1A-D), with greater abundance in *P. reticulatum*. On leaves, armored scale insects are concentrated at the base of the lamina on the abaxial face between and on the main veins (Fig. 1A-B). Yellow spots were observed where the adults suck the leaves, which is related to the presence and damage caused by the diaspidid scales (Fig. 2A-B).

*Hemiberlesia lataniae* specimens were deposited in the permanent slide collection of the Museu de Entomologia Ramiro Gomes Costa (MRGC), Departamento de Diagnóstico e Pesquisa Agropecuária, Secretaria de Agricultura, Pecuária, Produção Sustentável e Irrigação, Porto Alegre, Rio Grande do Sul, Brazil, under accession numbers 2409 and 2410.

According to Miller & Davidson (2005), the adult female has a rounded shield about 2 mm long. Color can range from white to light gray, or gray to brown, depending on the position on the host (leaves, smooth stems, or older stems and twigs); central to subcentral exuviae are gray, dark brown, or yellowish. The shield of the male is unknown (Ferris 1938; Claps & Wolff 2003).

The bodies of the adult *H. lataniae* females found in *P. cernuum* and *P. reticulatum* are oval-shaped (Fig. 2A), with broad and prominent median lobes on the pygidium (Fig. 3A), with yellowish-white coloration and a membranous cuticle, and features very similar to those of *Hemiberlesia rapax* (Comstock, 1881), but distinguished mainly by the presence of circunegenital glands (Fig. 3B).

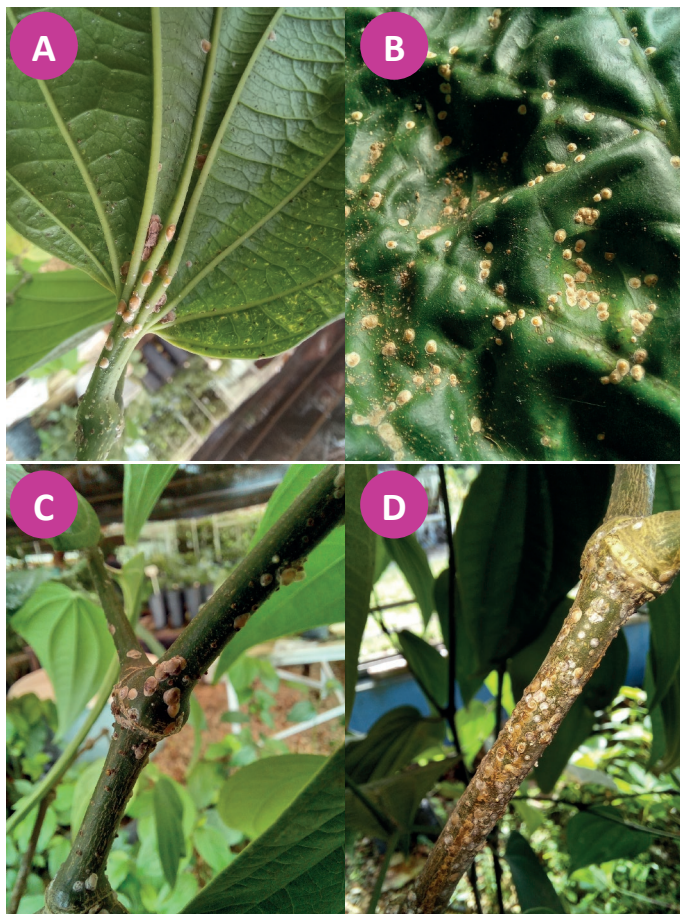
*Hemiberlesia lataniae* is a cosmopolitan and polyphagous species, and a pest of several crops in tropical and subtropical regions, with distribution in 114 countries, in association with 120 families and 361 genera of host plants (Couturier et al. 1992; García Morales et al. 2016). In Brazil, it is distributed in the states of Amazonas, Espírito Santo, Minas Gerais, Pará, Rio de Janeiro, Rio Grande do Sul, and São Paulo (Lepage 1938; Silva et al. 1968; Foldi 1988; Claps et al. 2001; Martins et al. 2022).

In the Brazilian Amazon (Amazonas and Pará), *H. lataniae* has been cited as occurring in association with *Annona muricata* L. (Annonaceae), *Citrus* spp. (Rutaceae) and *Laurus* sp. (Lauraceae) (Foldi 1988; Almeida et al. 2018).

In other Brazilian states, *H. lataniae* has been reported on several native and exotic hosts: *Albizia* sp. (Fabaceae); *Antigonon leptopus* Hook & Arn. (Polygonaceae); *Azadirachta indica* A. Juss. (Meliaceae); *Bambusa* sp. (Poaceae); (Cactaceae); *Camellia japonica* L. (Theaceae); *Cayaponia* sp., *Cucurbita* sp. (Cucurbitaceae); *Citrus* spp. (Rutaceae); *Latania* sp., *Cocos* sp., *Cocos nucifera* L., *Ptychosperma elegans* (R. Br.) Blume, *Siagrus romanzoffiana* (Cham.) Glassman (Arecaceae); *Coffea* sp. (Rubiaceae); *Cydonia oblonga* Mill., *Eriobotrya japonica* (Thunb.) Lindl., *Malus sylvestris* (L.) Mill., *Prunus* sp., *Pyrus* sp., *Pyrus communis* L., *Rosa* sp. (Rosaceae); *Ficus* spp., *Ficus carica* L. (Moraceae); *Gladiolus* sp. (Iridaceae); *Jasminum* sp., *Olea europaea* L. (Oleaceae); *Lantana microphylla* Franch., *Lantana* sp. (Verbenaceae); *Mangifera indica* L., *Schinus terebinthifolia* Raddi (Anacardiaceae); *Psidium guajava* L. (Myrtaceae); *Punica granatum* L. (Lythraceae); *Sida ulmifolia* Mill. (Malvaceae); *Solanum erianthum* D. Don L. (Solanaceae); *Syngonium podophyllum* Shcott (Araceae); *Vitis vinifera* L., *Vitis labrusca* L. (Vitaceae) (Claps et al. 2001; Claps & Wolff 2003; Wolff 2014; Wolff et al. 2014; Martins et al. 2022).

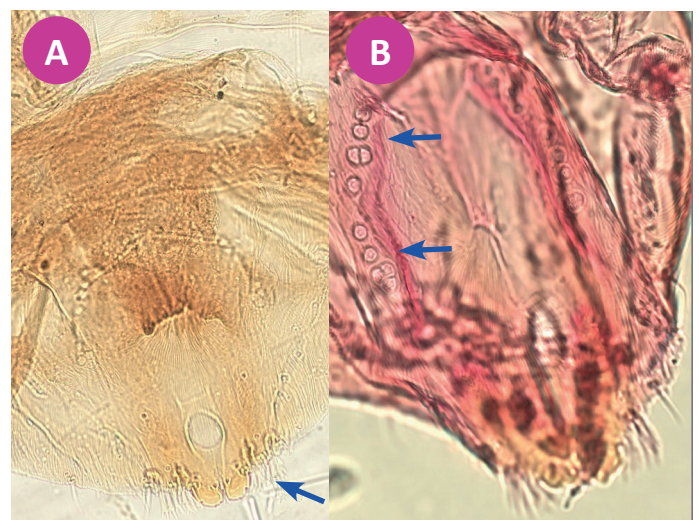


**Figure 2.** *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae) on *Piper reticulatum* L. (A) Shield of adult female; (B) Leaf with yellow spot due to presence and damage caused by the armored scale insects. (Photos: Aloysia C. S. Noronha).



**Figure 1.** *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae) on *Piper reticulatum* L. (Piperaceae) - Leaf: (A) abaxial and (B) adaxial surfaces; Stem: (C) node and (D) internode. (Photos: Aloysia C. S. Noronha).

According to García Morales et al. (2016), in plants of the Piperaceae family, *H. lataniae* has been recorded in *Macropiper excelsum* (Forst.) Miq. and *Piper methysticum* G. Forst. in New Zealand. The present study reports the armored scale insects *H. lataniae* in the species *P. cernuum* and *P. reticulatum* for the first time in Brazil and South America. Consequently, the species currently has a recorded occurrence in Brazil in hosts belonging to 25 botanical families (Foldi 1988; Claps et al. 2001; Claps & Wolff 2003; Wolff 2014; Wolff et al. 2014; Almeida et al. 2018; Martins et al. 2022). The species *P. nigrum* (black pepper) is widely cultivated in the northern Brazilian states and used as a condiment. The occurrence of *H. lataniae* in plants of the same genus *Piper* should be a source of concern for black pepper producers, as it is a polyphagous species and can start attacking crops and eventually become an important pest in the crop in the region.



**Figure 3.** Female of *Hemiberlesia lataniae* (Signoret, 1869) (Hemiptera: Diaspididae). (A) Details of the pygidium broad and prominent median lobes (indicated by the arrow); (B) circungenital glands (indicated by the arrows). (Photos: Vera R. S. Wolff).

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### Authors' Contributions

ACSN, LSD, RCV, MBO conducted the sampling and laboratory activities. ICM carried out the activities in the greenhouse. VRSW identified the armored scale species. ACSN and VRSW wrote the manuscript. All authors discussed and revised the manuscript.

### Conflict of Interest Statement

The authors declare that there is no conflict of interest.

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