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RESEARCH ARTICLE

A new species and new faunistic records of scale insects (Homoptera: Coccinea) from Indochina

Новый вид и новые фаунистические находки кокцид (Homoptera: Coccinea) из Индо-Китая

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Abstract. A new species, *Antonina kazasae* **sp. nov.** (Pseudococcidae), is described and illustrated based on specimens collected in southern Vietnam (Cat Tien National Park). Additionally, fourteen other species from the families Coccidae, Margarodidae, and Pseudococcidae are recorded for the first time from various countries of Indochina (Myanmar, Thailand, Laos, and Vietnam).

Резюме. В статье описывается и иллюстрируется новый для науки вид *Antonina kazasae* **sp. nov.**, собранный в южном Вьетнаме (Национальный парк Каттьен). Четырнадцать видов кокцид из семейств Coccidae, Margarodidae и Pseudococcidae впервые указываются для разных стран Индокитая (Мьянма, Тайланд, Лаос и Вьетнам).

Key words: scale insects, soft scales, mealybugs, giant scales, morphology, taxonomy, new records, new species

Ключевые слова: кокциды, ложнощитовки, псевдококциды, маргародиды, морфология, таксономия, новые находки, новый вид

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Introduction

The scale insects of Indochina, which includes Myanmar, Thailand, Laos, and Vietnam, have been the subject of intensive study over the past few decades (Williams, 2004; Gavrilov-Zimin, 2012, 2016, 2017a, b, 2018, 2019, 2020, 2023; Suh & Bombay, 2015; Dao et al., 2018, 2023). According to the international database ScaleNet (Garcia-Morales et al., 2024), the number of scale insect species recorded in these countries is as follows: Thailand (224 species), Laos (64 species), and Vietnam (163 species); however, there are no data available for Myanmar. It appears that the countries in the region have been investigated coccidologically in an uneven manner, despite their relatively similar ecological characteristics. It is evident that the actual biodiversity of scale insects in each of these countries, as well as in Indochina as a whole, is likely to be significantly higher. Below, we present some results from our recent investigations on this topic, including the description of one species new to science and 14 new records for the aforementioned countries.

Material and methods

The specimens examined in this study were collected by the authors during expeditions in Myanmar, Thailand, Laos, and Vietnam from 2017 to 2021. One species was collected by the late Professor E.S. Sugonyaev in Vietnam in 1993. Detailed collection data are provided below. The methods for preparing and studying scale insects have been described extensively in previous literature, such as Gavrilov-Zimin et al. (2021).

All the material, including type specimens, are deposited in the collection of the Zoological Institute of the Russian Academy of Sciences in St Petersburg, Russia (ZIN RAS).

The system of higher taxa employed in this study is based on the publications by Gavrilov-Zimin (2018) and Gavrilov-Zimin et al. (2021).

Description of a new species

Order Homoptera

Suborder Coccinea

Family Pseudococcidae

Subfamily **Pseudococcinae**

Genus Antonina Signoret, 1872

Note. The Oriental species of *Antonina* were revised by Williams (2004), who provided a comprehensive identification key. More recently, only one new Oriental species, *Antonina diversiglandulosa* Gavrilov-Zimin, 2016, was described from Thailand. In the related Palaearctic fauna, including southern China, the *Antonina* species were revised by Danzig & Gavrilov-Zimin (2015: 509–526), with an appropriate key provided.

Antonina kazasae Gavrilov-Zimin, sp. nov. (Fig. 1)

Holotype, adult female, **Vietnam**, Cat Tien National Park., in leaf sheaths of bamboo, 20.IV.2021, T. Novgorodova leg. (ZIN RAS, K 1839).

Paratype, 1 adult female (on separate slide) with collecting data as for holotype.

Description. Adult female. Body almost round, 1.5–2.0 mm in diametre, sclerotised in mature females (especially posterior segment of abdomen). Antennae vestigial, one-segmented.

Legs absent. Anal apparatus located inside of anal tube, about 120 µm long; anal ring with six setae, each about as long as anal tube; external opening of anal tube with ring of tubular ducts. Vulva as in other congeners, with lateral and posterior apophyses. Both pairs of ostioles absent. Circulus absent. Multilocular pores, each about 5 µm in diametre, present in very few numbers, forming sparse transverse rows in medial zone of abdominal sternites. Trilocular pores (about 3 µm in diametre) and simple discoidal pores (about 2 µm in diametre) numerous, scattered across entire body surface; trilocular pores located within spiracle atrium slightly smaller than other trilocular pores. Discoidal pores with irregular structures, which common among many other congeners, completely absent. Tubular ducts varying in length, measuring approximately $5-10 \mu m$, abundant, distributed across both sides of body, forming a ring around opening of anal tube. A few conical setae forming compact group on last abdominal tergite around anal opening. Minute flagellate setae sparse, scattered on all segments of body.

Males and morphology of larvae unknown.

Comparison. The new species lacks the socalled irregular disc-like pores typically found on the venter posterior to the spiracles in most species of *Antonina*, including all Oriental species described to date. In the Palaearctic fauna, only two *Antonina* species are known to lack these irregular pores: *A. evelynae* Gavrilov, 2003 (found along the Russian Black Sea coast) and *A. vera* Borchsenius, 1956 (recorded from Mongolia, China, and Korea). However, both of these species possess a wide band of multilocular pores along the body margin, whereas *A. kazasae* **sp. nov.** does not exhibit such a band at all.

Additionally, the new species differs from all its congeners by the presence of a ring of tubular ducts surrounding the external opening of the anal tube.

Reproduction. The females of the new species exhibit complete ovoviviparity, similar to all other studied species within the same genus, as well as to legless mealybugs in general.

Ecology. The females were found within the leaf sheaths of bamboo, where they were attended to and actively guarded by the black ant, *Dolicho*-



Fig. 1. Antonina kazasae sp. nov., holotype.

derus thoracicus (Smith, 1860) (identified by T. Novgorodova) (Fig. 2).

Etymology. The species is named in honor of the outstanding Russian embryologist, Professor Olga M. Ivanova-Kazas (1913–2015), who elucidated the general distribution of viviparity and ovoviviparity across various taxa within the Animalia kingdom.

New faunistic records

Family Margarodidae

Coronaproctus castanopsis Li et al., 2023

Material examined. Adult females, **Vietnam**, Cat Tien National Park., on twigs of *Lagerstroemia* sp., 15.IV.2021, T. Novgorodova leg. (ZIN RAS, K 1808).



Fig. 2. Females of Antonina kazasae sp. nov. with the black ant Dolichoderus thoracicus (Smith, 1860) on bamboo.

Note. The species was recently described from China (Zhejiang Province), from *Castanopsis eyrei* (*Fagaceae*). Here, it is recorded for the first time from Vietnam and Indochina as a whole.

Family Pseudococcidae

Antonina milleri Williams, 2004

Material examined. Adult females, **Laos**, *Bokeo Prov.*, about 10 km S to Huai Sai, on twigs of bamboo, 11.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1376).

Note. This species, which inhabits various bamboos, is widely distributed across several countries in Southeast Asia; however, it is recorded here for the first time from Laos.

Ferrisia malvastra (McDaniel, 1962)

Material examined. Adult females, Myanmar, Mandalay Prov., Pagan, on stems of dicotyledonous herb, 4.XI.2019, I. Gavrilov-Zimin leg. (ZIN RAS, K 1510). **Note.** Widely distributed pantropical and subtropical pest. This is the first record from Myanmar.

Maconellicoccus ramchensis Williams, 1996

Material examined. Adult females, **Thailand**, *Chiang Rai Prov.*, vicinity of Chian Rai, near Mae Fah Luang University, on inflorescence of tree, 8.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1372).

Note. This species was previously known from the type locality only (Nepal), from *Durio* sp. (Malvaceae). This is the first record from Thailand.

Nipaecoccus viridis (Newstead, 1894)

Material examined. Adult females, **Laos**, *Oudomx-ay Prov.*, Pak Beng, bank of Mekong River, on twigs of dicotyledonous tree, 13.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1378).

Note. Widely distributed polyphagous pantropical and subtropical pest. This is the first record from Laos.

Paracoccus interceptus Lit, 1997

Material examined. Adult females, **Laos**, *Oudomxay Prov.*, Pak Beng, bank of Mekong River, on inflorescences of ornamental dicotyledonous herb, 14.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1384).

Note. This polyphagous species is widely distributed across various countries in Southeast Asia; however, it is being recorded here for the first time from Laos.

Phenacoccus solani Ferris, 1918

Material examined. Adult females, **Myanmar**, *Mandalay Prov.*, Pagan, on stems of dicotyledonous herb, 31.X.2019, I. Gavrilov-Zimin leg. (ZIN RAS, K 1506).

Note. Widely distributed polyphagous pantropical and subtropical pest. This is the first record from Myanmar.

Thaimyrmococcus daviesi Williams, 2002

Material examined. Adult females, **Laos**, *Oudomxay Prov.*, Pak Beng, bank of Mekong River, on twigs of dicotyledonous tree, 13.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1377).

Note. This species was previously known only from the type locality in Thailand, where it was collected from *Dipterocarpus* sp. (Dipterocarpaceae) and *Rubus* sp. (Rosaceae). This represents the first record from Laos.

Trionymus bambusae (Green, 1922)

Material examined. Adult females, **Laos**, *Luang Prabang Prov.*, Luang Phabang, bank of Mekong River, under leaf sheathes of bamboo, 16.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1394).

Note. This species is widely distributed across various Poaceae plants in different countries of Southeast Asia; however, it is recorded here for the first time from Laos.

Trionymus palauensis Beardsley, 1966

Material examined. Adult females, **Thailand**: *Chiang Rai Prov.*, vicinity of Chian Rai, near Mae Fah Luang University, on stem of reed, 8.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1367); *Chiang Mai Prov.*, near Chiag Dao Wildlife Sanctuary, on leaves and roots of bamboo-like grass, 5.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1370).

Note. The species, which inhabits various Poaceae plants, has previously been reported from India, Sri Lanka, the Philippines, and Papua New Guinea. This is the first record from Thailand and Indochina as a whole.

Family Coccidae

Bambusaecoccus maolanensis Meng et Xing, 2022

Material examined. Adult females, **Vietnam**, *Hanoi*, Ba Vi National Park, on bamboo, 3.VIII.1993, E. Sugonyaev leg. (ZIN RAS, K 11876).

Note. The species was recently described from Guizhou Province, China, from *Bambusa* sp. (Poaceae). This is the first record from Vietnam and Indochina as a whole.

Dicyphococcus bigibbus Borchsenius, 1959

Material examined. Adult females, **Laos**, *Luang Phabang Prov.*, Luang Phabang, embankment of Mekong River, on twigs of dicotyledonous tree, 16.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1387).

Note. This species, which inhabits various arboreal dicotyledonous plants, was previously known only from the type locality in the Yunnan Province, China. This represents the first record for Laos and Indochina as a whole.

Drepanococcus cajani (Maskell, 1891)

Material examined. Adult females, **Thailand**, *Chiang Rai Prov.*, vicinity of Chian Rai, near Mae Fah Luang University, on leaves of dicotyledonous tree, 8.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1371).

Note. This polyphagous species is widely distributed across various countries in Southeast Asia; however, it is recorded here for the first time from Thailand.

Saissetia oleae (Olivier, 1791)

Material examined. Adult females, **Laos**, *Bokeo Prov.*, c. 10 km S to Huai Sai, on twigs of dicotyledonous tree, 10.VI.2017, I. Gavrilov-Zimin leg. (ZIN RAS, K 1374).

Note. Widely distributed pantropical and subtropical polyphagous pest. This is the first record from Laos.

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