

# *Weitschatus stigmatus* and *Hoffeinsia foldii* (Hemiptera: Coccoomorpha) from Eocene ambers are conspecific

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**Abstract:** Based on a comparison of morphologies of the first-instar nymph of *Hoffeinsia foldii* Koteja, 2008 and the adult male of *Weitschatus stigmatus* Koteja, 2008 with those of *Qinococcus podocarpus* Wu, 2022, the author considers that *Weitschatus stigmatus* is equivalent to *Hoffeinsia foldii*, **syn. nov.** (Weitschatidae).

**Key words:** new synonymy, scale insects, adult male, first-instar nymph

始新世琥珀中的 *Weitschatus stigmatus* 和 *Hoffeinsia foldii* 是同种（半翅目：蚧次目）

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**摘要：**化石种 *Hoffeinsia foldii* Koteja, 2008 和 *Weitschatus stigmatus* Koteja, 2008 分别仅依据一龄若虫、雄成虫形态特征建立。在与罗汉松始珠蚧 *Qinococcus podocarpus* 比较后，认为 *Hoffeinsia foldii* 是 *Weitschatus stigmatus* 的新异名。

**关键词：**新异名；蚧虫；雄成虫；一龄若虫

The fossil genus and species *Hoffeinsia foldii* Koteja was described by Koteja in 2008 based only on the first-instar nymphs from Baltic and Bitterfeld amber. After comparison with those of *Xylococcus filiferus* Low, *Neosteingelia texana* Morrison, and *Jansenus burgeri* Foldi, Koteja considered that the first-instar nymph of *H. foldii* is close to that of *J. burgeri*, but differs from the latter mainly in a 7-segmented antenna, and placed the new genus in the family Kuwaniidae (Koteja 2008).

In the Coccoomorpha, the first-instar nymph with 7-segmented antennae is known in the extant species of the genera *Puto* Signoret, *Pityococcus* McKenzie, *Platycoelostoma* Morrison, *Neogreenia* MacGillivray, and *Qinococcus* Wu (McKenzie 1942; Gullan & Sjaarda 2001; Wu & Cheng 2006; Williams *et al.* 2011; Wu & Nan 2012; Wu *et al.* 2022), and the extinct *H. foldii* (Koteja 2008). Among them, the former 3 genera have club-shaped apical segments of antennae, whereas the latter 3 genera have the apical segment cylindrical with a truncated apex. In addition, the crawler of *Hoffeinsia* shares with those of *Qinococcus* and *Neogreenia* a parallel-sided body, the segments III–VI of antennae narrowed basally, claw digitules knobbed and longer than claw, and ventral cicatrix present, but differs from the latter two genera by the claw lacking a denticle.

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The genus *Qinococcus* is monotypic, with the type species *Q. podocarpus* found in southern China (Wu *et al.* 2022). The genus *Neogreenia* includes 5 species, distributed in Sri Lanka and China (Green 1922; Wu & Nan 2012).

From the Baltic and Bitterfeld amber, an extinct genus *Weitschatus* Koteja, 2008 with its type species *W. stigmatus* Koteja, 2008 and the second species *W. vysniauskasi* Koteja, 2008 were also described based on the adult male. Among the described adult males, the genus *Weitschatus* is closest to the recently established genus *Qinococcus*. They share the following characters: antennae 10-segmented, with flagellar segments cylindrical and lacking capitate setae; compound eyes present; scutum without a membranous area; scutellum without membranous lateral areas; basisternum hexagonal; fore wings hyaline, broad at base, with a narrow alar fold for holding hamuli, subcostal ridge with distinct club-shaped pterostigma, cubital ridge situated beyond middle of wing; tarsus two-segmented; tail tufts present on abdominal tergites VI and VII (Koteja 2008; Vea & Grimaldi 2015; Lin *et al.* 2018; Wu *et al.* 2022). But *Qinococcus* can be easily distinguished from *Weitschatus* by the anterior flexing patch being forked and having two posterior flexing patches in the fore wing.

The adult males of *Neogreenia zeylanica* (Green) and *N. zizyphi* Tang have been described by Green (1922) and Tang & Hao (1995) respectively, but both descriptions are too simple to fully compare with other species.

Based on *Weitschatus* as the type genus, Koteja (2008) established the new family Weitschatidae. Later, the two genera, *Pseudoweitschatus* Vea & Grimaldi, 2015 and *Criniverticillus* Lin, Yao & Ren from mid-cretaceous Burmese amber, were described and placed in this family.

From the above-mentioned, it is clear that both genera *Weitschatus* and *Hoffeinsia* are closest to *Qinococcus*. Based on the fact that both *Weitschatus stigmatus* and *Hoffeinsia foldii* were the dominant species in the xylococcid group in Baltic and Bitterfeld amber (Koteja 2008), the author infers that *W. stigmatus* and *H. foldii* are congeneric and conspecific. These two genera and species were published simultaneously in the same paper, and according to the Article 24.2 of the 4th edition of the ICZN (ICZN 1999), the precedence of names in this case is determined by the first reviser. Considering that scale insect males may offer more taxonomic characters than first-instar nymphs and thus be more useful in determining relationships, and the name *Weitschatus* was already used to create the family name, the author proposes that *Weitschatus* Koteja, 2008 = *Hoffeinsia* Koteja, 2008, **syn. nov.**, and *Weitschatus stigmatus* Koteja, 2008 = *H. foldii* Koteja, 2008, **syn. nov.**

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