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Anaphothrips cocos sp.n. (Thysanoptera, Thripinae) from coconuts in Timor Leste

LAURENCE A. MOUND
Australian National Insect Collection, CSIRO, PO Box 1700, Canberra, ACT 2601
laurence.mound@csiro.au; https://orcid.org/0000-0002-6019-4762

The *Anaphothrips* genus-group is a complex of 40 genera of Thripinae that share the condition of "no long pronotal setae". In traditional Thysanoptera classifications this absence of long pronotal setae was interpreted as a plesiomorphy by comparison to the condition in Aeolothripidae. Thus Jacot-Guillarmod (1974) catalogued all Thripinae genera with species showing this condition in a sub-tribe Aptinothripina Karny, a long-established arrangement that had been adopted by many authors. However, a study by Buckman *et al*. (2013) confirmed that taxa in the families Merothripidae and Melanthripidae share an important number of structural plesiomorphies, and these taxa all have long pronotal setae. From this it is concluded that absence of long pronotal setae is a derived condition, and moreover this loss apomorphy has arisen independently within several unrelated genera, such as *Dichromothrips*, *Trichromothrips* and *Thrips* (Mound & Palmer 1981; Mound & Masumoto 2004, 2005). As a result, it is possible that the *Anaphothrips* genus-group does not represent a single lineage, and that not all of the included genera are closely related.

The previously undescribed species of Thripidae considered here was found breeding on the base of coconuts. In that this thrips lacks any long pronotal setae it clearly must be considered within the *Anaphothrips* genus-group, although its relationships within that group are not clear. Masumoto and Okajima (2017) provided an identification key to the 40 genera that they considered might be included in a broadly-based *Anaphothrips*-group, and this new species tracks cleanly in that key to couple 16 and to the genus *Anaphothrips*. It can safely be excluded from all of the other genera in that key. An extensive diagnosis of *Anaphothrips* genus was produced by Mound and Masumoto (2009) that was based on a large percentage of the 86 species currently included in the genus (ThripsWiki 2021). When compared to that diagnosis, the new species was found to share almost all of the given character states, but with the following unusual exceptions:

1. A metathoracic furcal spinula is present that is as robust as that of the mesothorax (Fig. 10). Presence of this furcal spinula is particularly surprising because it is not known in any member of the genus *Anaphothrips*.
2. The fore wing clavus has a discal seta (Fig. 2) in addition to a row of up to eight veinal setae. Species of *Anaphothrips* do not have a discal seta on the clavus, but in some species the most basal of the veinal setae is migrated onto the surface. In this new species the marginal setal row is complete and recognition of the discal seta is unequivocal.
3. Metapre-episternum well-developed, parallel-sided, elongate and complete, rather than short and tapering at the apex as in *Anaphothrips* species.
4. Tergites IV–VI have the lateral pair of discal setae (S3) equal in size to setae S4 on the posterior margin (Fig. 3) instead of being much smaller as in all *Anaphothrips* species.
5. On sternite VII of females the median pair of marginal setae arises on the margin, not in front of the margin as in *Anaphothrips* species.
6. Males of *Anaphothrips* species commonly (but not always in Australian species) have a C-shaped pore plate on several sternites, whereas the new species has a very small circular pore plate (Fig. 5).
7. Males of *Anaphothrips* commonly have two pairs of stout thorn-like setae on tergite IX, whereas the new species has these setae slender (Fig. 11).

Moreover, in contrast to many species of *Anaphothrips*, none of the compound eye facets are pigmented, and ocellar setae pair III arise close together in the middle of the ocellar triangle. Despite all these differences, and the fact that there are no synapomorphies to diagnose the genus *Anaphothrips*, the new species is here described in this genus rather than erect yet another monobasic genus of doubtful affinities.

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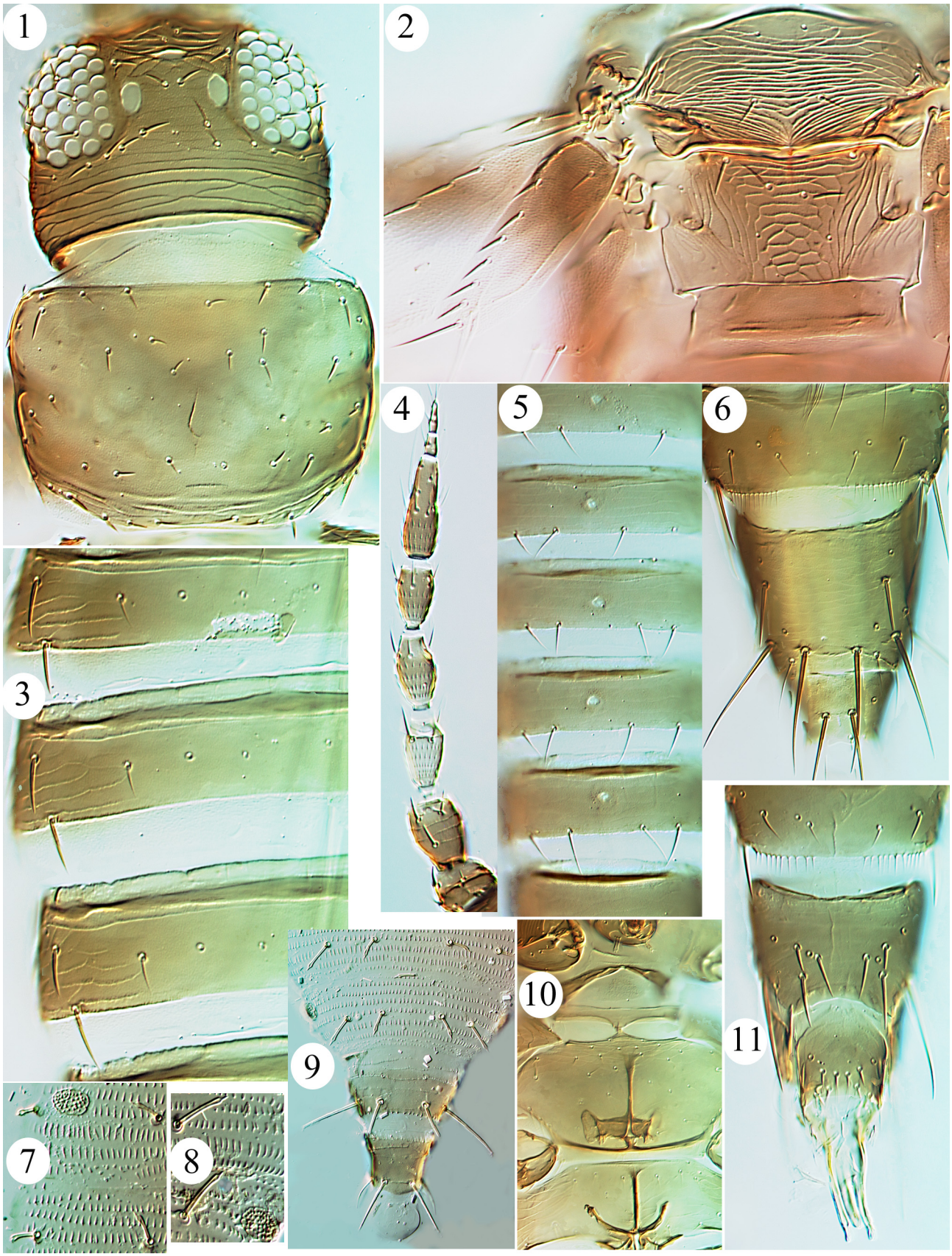

FIGURES 1–9. *Anaphothrips cocos*. **(1)** head & pronotum; **(2)** meso- metanotum & clavus; **(3)** tergites IV–VI; **(4)** antenna**; (5)** male sternites; **(6)** female tergites VIII–X; **(7)** larva II abdominal tergite II spiracle; **(8)** larva II abdominal tergite VIII spiracle; **(9)** larva II tergites VII–X; **(10)** female thoracic sternites; **(11)** male tergites VIII–X.

***Anaphothrips cocos* sp.n.**
(Figs 1–11)

Female macroptera. Body and all femora light brown, tarsi yellow, hind tibiae clear yellow, mid and fore tibiae yellow on apical third; antennal segments I–II and V–VI as brown as head, III yellow, IV variably shaded on apical half; fore wing brown with basal quarter white, clavus brown at base with apex pale; major setae on abdomen brown.

Antennae 8-segmented (Fig. 4), sense cones forked on III and IV, III–VI with many microtrichia, I without dorso-apical setae. Head with 3 pairs of ocellar setae (Fig. 1), pair I arranged slightly asymmetrically, pair III within ocellar triangle on tangent between anterior margins of hind ocelli; eyes without pigmented facets; maxillary palps 3-segmented. Pronotum with no sculpture lines, 3 pairs of posteromarginal setae with pair IV slightly larger; ferna usually entire. Mesonotal campaniform sensilla present (Fig. 2). Metascutum reticulate, median setal pair arising medially, paired campaniform sensilla wide apart on posterior third (absent in holotype). Metapre-episternum long, transverse and complete. Prospinosternum broadly transverse (Fig. 10). Mesothoracic sternopleural sutures complete, furca with spinula. Metathoracic furca with stout spinula (Fig. 10). Tarsi 2-segmented. Fore wing first vein with 3 setae near the base, then a group of 4 setae, followed by a long gap to 2 setae near the apex; second vein with many setae; clavus with 5–8 marginal and one discal setae (Fig. 2). Tergites without sculpture medially, without marginal craspeda or ctenidia; setal pair S1 minute, S3 as stout as S4 (Fig. 3); VIII with posteromarginal comb of fine microtrichia on lateral thirds only (Fig. 6); tergite IX with two pairs of campaniform sensilla, mid-dorsal setae placed laterally; tergite X with weak dorsal split. Sternites without craspeda, II with 2 pairs of marginal setae, III–VII with 3 pairs, median pair on VII arising on posterior margin.

Measurements (holotype female in microns). Body length 1150. Head, length 100; width 135. Pronotum, length 110; width 160. Fore wing length 460. Tergites VII-X lengths, 60, 80, 45. Antennal segments III-VIII length 40, 35, 30, 45, 10, 12.

Male macroptera. Similar to female, including comb on tergite VIII, but antennal segment II paler; sternites III–VII with small circular pore plate medially (Fig. 5); tergite IX with all setae slender (Fig. 11).

Measurements (paratype male in microns). Body length 860. Fore wing length 410. Sternal pore plates diameter 10–12. Tergite IX median setae 25.

Larva II. Body yellow, tergites IX–X brown (Fig. 9). Dorsal and ventral surfaces covered with rows of small plaques, dorsal setae with pencil-pointed apices (Figs7–9); pronotum and head with no sculpture; pronotal posteroangular setae (D6) less than 15 microns; tergite VIII spiracles with multiple pores (Fig. 8), posteroangular setae (D3) about 15 microns long; tergite IX posterior margin finely dentate, major setae blunt. Sternal setae all finely pointed.

Specimens studied. Holotype female, **Timor Leste**, Buikaran Village, at base of nut of *Cocos nucifera*, 8–9.ii.2005 (Mark Ritchie), in Australian National Insect Collection, CSIRO, Canberra.

Paratypes: 4 females, 4 males taken with holotype [also taken with these adults were 2 larvae II and one larva IV with long wing buds].

Comments. Since this species was found breeding on the nut of *Cocos nucifera*, a plant that is particularly widespread around the world, its origin and faunal relationships could be in any tropical country. *Anaphothrips* species live on Poaceae in many parts of the world, particularly in North America (Nakahara 1995), whereas in Australia members of the genus are associated with a range of unrelated plants, often in semi-arid areas (Mound & Masumoto 2009). Most of the nine available specimens have a pair of campaniform sensilla on the metascutum, but the holotype and one male lack these structures, and one female has only a single metascutal campaniform sensilla. In the key by Vierbergen *et al*. (2010) the second instar larvae track to a couplet that includes *Anaphothrips obscurus*, a widespread grass-living species, but abdominal segments IX and X are uniformly brown in the new species.

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