

## Article

**Redescription of *Oulenzia arboricola* (Oudemans, 1928), type species of *Oulenzia* Radford, 1950 (Acari: Astigmata: Winterschmidtidae)**

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**Abstract**

A detailed description and illustration of *Oulenzia arboricola* (Oudemans, 1928) are provided based on the type specimen collected on *Hevea* leaves, from Medan, Deli, Sumatra (Indonesia). The definition of the genus *Oulenzia* is clarified and the taxonomic position of species under *Oulenzia* is discussed.

**Key words:** Taxonomy, Asia, Indonesia, *Hevea*

**Introduction**

Oudemans (1928) erected the genus *Lenzia* based on a new species, *L. arboricola* Oudemans, 1928, found on leaves of *Hevea* from Medan Deli, Sumatra (Indonesia). Radford (1950) proposed *Oulenzia* to replace *Lenzia* because the name *Lenzia* was pre-occupied. This was followed by Baker & Wharton (1952) and Meyer & Rodrigues (1965).

Hughes (1962) considered *Oulenzia* and *Czenspinskia* to be in the genus *Calvolia*, a genus erected by Oudemans (1911) based on the deutonymphal instar (hypopus) of *Calvolia hagensis* Oudemans, 1911, and also provided a diagnosis for *Calvolia*. OConnor (per. communication 2009) considers *Oulenzia* to be distinct from *Calvolia* and that the latter should be a junior synonym of another genus in a different subfamily because its type species, *Calvolia hagensis* Oudemans, 1911, represents the same species as the type species of an older genus based on the adult form.

The illustration as well as some essential morphological details of *Oulenzia arboricola* (Oudemans, 1928) were not provided in the original (Oudemans 1928) and subsequent related publications (Hughes 1962; Meyer & Rodrigues 1965). The purpose of this redescription is to provide morphological details for *Oulenzia arboricola* as well as a definition for the genus.

**Methods**

Specimens were examined and measured with an interference-phase contrast microscope (Fan *et al.* 2010). Illustrations were made with a drawing tube attached to a Nikon interference-phase contrast microscope and double checked under a Zeiss interference-phase contrast microscope and were edited with Photoshop CS4 software. All measurements are given in micrometers ( $\mu\text{m}$ )

Terminology used for idiosomal chaetotaxy follows Griffiths *et al.* (1990), that for palp and leg chaetotaxy follows Grandjean (1939) and Griffiths (1970).

**Redescription of *Oulenzia arboricola* (Oudemans, 1928)**

(Figs 1–3)

*Material examined*

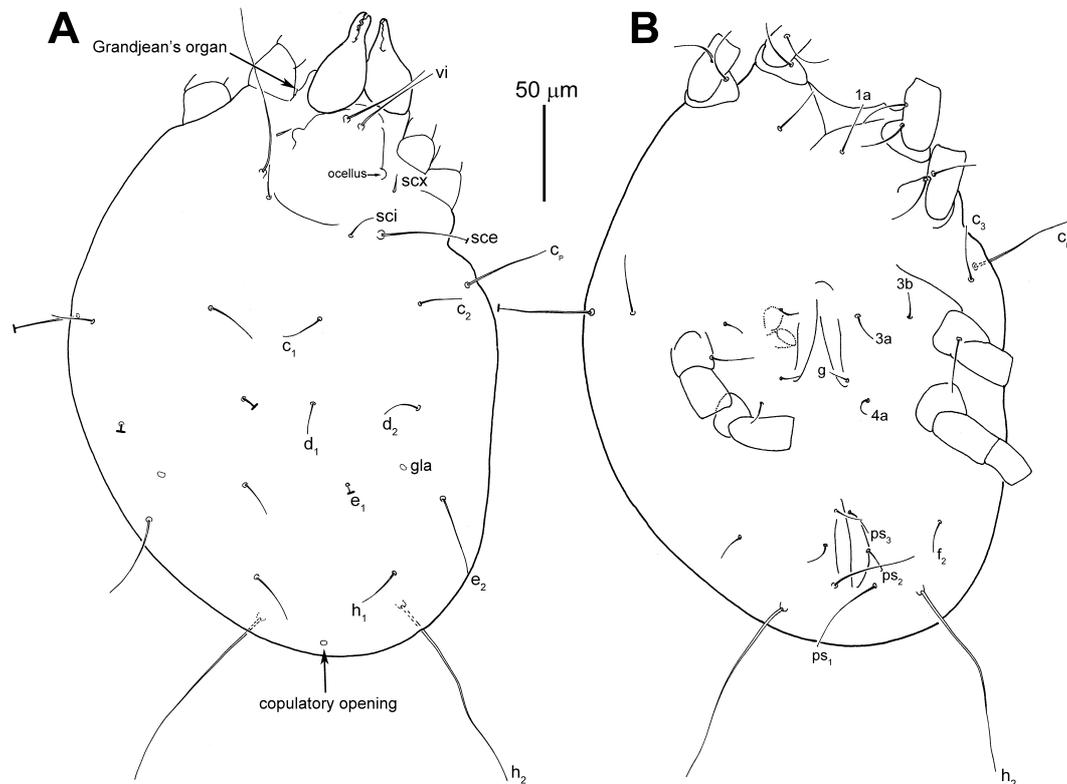
Type specimen: *Oulenzia arboricola* Oudemans, 1928 (as *Lenzia arboricola* Oudms. 1928), adult female, on *Hevea* leaves, from Medan, Deli, Sumatra, May 1918, Accession No.: RMNH Acari P7031, deposited in NCBN (Nederlands Centrum voor Biodiversiteit Naturalis, Netherlands).

Comparison specimens: *Oulenzia gossypii* Meyer & Rodrigues, 1965, a paratype female, on *Gossypium* sp., from Kaidundjua, Mozambique, 17 Apr 1964, by M.C. Rodrigues, Accession No.: Acy165/23; deposited in the Arachnida Collection of Plant Protection Research Institute, Pretoria, South Africa. An undescribed female, on *Lansium domesticum*, from Jasin Malaka State, Malaysia, 8 Jan 2003, by Yusof Othman, Accession No.: YO 030201-5e; deposited in the New Zealand Arthropod Collection. Dozens of females intercepted on banana from Ecuador, from 2009 to 2012, deposited in Plant Health & Environment Laboratory, Auckland, New Zealand.

*Diagnosis*

FEMALE. Idiosoma with setae  $f_2$  present; setae *sce* and  $h_2$  much longer than other setae; *sce* about 2.3× as long as *vi* and 6.8× as long as *sci*;  $c_p$  2.1× as long as  $c_1$ ;  $e_2$  2.0× as long as  $e_1$ . Tibiae III and IV with  $\Phi$  prominently shorter than those on tibiae I and II, Setae *hT* on tibiae I and II, *kT* on tibia IV, *la* and *ra* on tarsus II, *w* and *r* on tarsus III, *e* and *f* on tarsi I–IV absent. Tarsi III and IV with *d* positioned at the level of apical 1/3 of segment.

MALE, LARVA and NYMPH unknown.

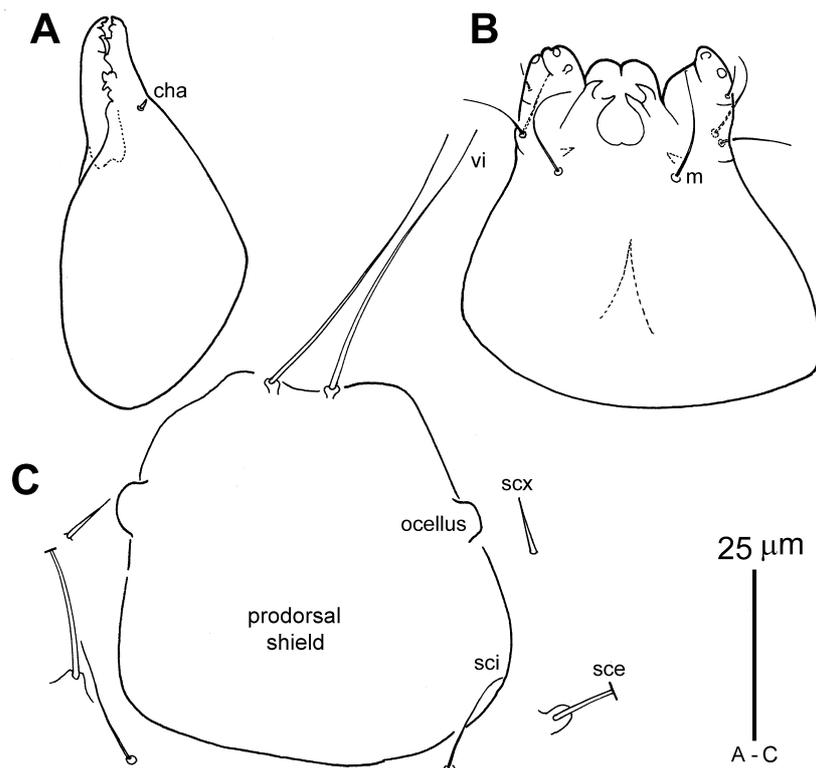


**FIGURE 1.** *Oulenzia arboricola* (Oudemans, 1928) (female). **A**, dorsal view of idiosoma; **B**, ventral view of idiosoma.

### Description

**FEMALE** (n= 1; Figs 1–3). Idiosomal length 287, width at level between coxae II and III 217; cuticle smooth (Fig. 1). Chelicerae (Fig. 2A) robustly chelate, 56, movable digit 21, cheliceral seta *cha* conical, spiniform, 2.5; subcapitulum (Fig. 2B) bearing a pair of setae *m* (17); palpal supracoxal seta *elcp* absent; dorsal and lateral palptibial setae filiform, 16 and 12, respectively; dorsal palptarsal seta filiform, 8, terminal palptarsal solenidion tiny, 1.5.

Dorsum (Figs 1A and 2C). Prodorsal shield (Fig. 2C) nearly trapezoidal, without obvious punctures, 52 long, width at anterior and posterior margins 46 and 55, respectively; lateral margins of anterior half nearly straight, posterior margin slightly convex. Supracoxal sclerite elongate, duct of supracoxal gland not seen; Grandjean's organ finger-shaped, smooth and short, 6; supracoxal setae *scx* (Fig. 2C) spiniform, smooth, tapering from base to tip, 10. Ocelli (Fig. 2C) positioned approximately midway between *vi* and *sce*; setal alveoli of *ve* not seen; *sce* about 2.3× as long as *vi* and 6.8× as long as *sci*; *sci-sci* 2.8× as wide as *sci-sce*; lengths: *vi* 45, *sci* 15, *sce* 102; distances: *vi-vi* 7, *sci-sci* 45, *sci-sce* 16. Opisthotal gland openings *gla* located at the level between *e*<sub>2</sub> and *d*<sub>2</sub>. Opisthosomal tubercles not seen. Hysterosomal setae *f*<sub>2</sub> present, *h*<sub>3</sub> absent; *c*<sub>1</sub> slightly longer than *c*<sub>2</sub> and about 1.5× as long as *d*<sub>1</sub>, *d*<sub>2</sub>, *e*<sub>1</sub> and *f*<sub>2</sub>; *c*<sub>p</sub> 2.1× as long as *c*<sub>1</sub>; *e*<sub>2</sub> 2.0× as long as *e*<sub>1</sub>; lengths: *c*<sub>1</sub> 27, *c*<sub>2</sub> 21, *cp* 57, *c*<sub>3</sub> 28, *d*<sub>1</sub> 18, *d*<sub>2</sub> 19, *e*<sub>1</sub> 19, *e*<sub>2</sub> 38, *f*<sub>2</sub> 17, *h*<sub>1</sub> 26, *h*<sub>2</sub> 101; distances: *c*<sub>1-c</sub><sub>1</sub> 56, *c*<sub>1-d</sub><sub>1</sub> 48, *d*<sub>1-d</sub><sub>1</sub> 37, *d*<sub>1-e</sub><sub>1</sub> 46, *e*<sub>1-e</sub><sub>1</sub> 52, *e*<sub>1-h</sub><sub>1</sub> 48, *h*<sub>1-h</sub><sub>1</sub> 70.

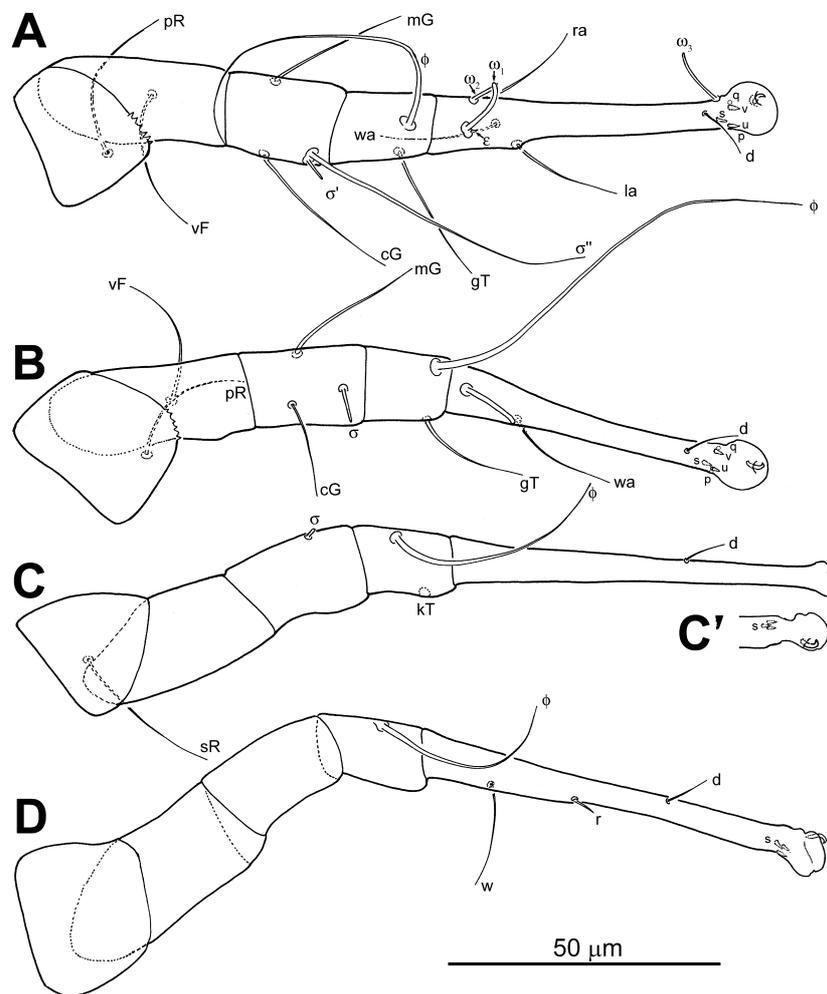


**FIGURE 2.** *Oulenzia arboricola* (Oudemans, 1928) (female). **A**, ventral view of chelicera; **B**, subcapitulum; **C**, prodorsum.

Venter (Fig. 1B). Coxal apodemes I joined at midline, forming a prosternal apodeme directed posteromedially; coxal apodemes II directed posteromedially; sejugal apodeme very faint, a simple ridge; epigynal sclerite (Fig. 1B) thickened, just anterior of genital opening; apodemes III and IV

directed anteriomedially. Ventral setae *1a* inserted posterolaterad of coxal plate I, *3a* laterad of genital opening, *g* posteromedial to genital papillae, *4a* posterolateral to genital opening; lengths: *1a*= 27, *3a*= *3a*= 15, *4a*= 14, *g*= 13. Genital opening (Fig. 1B) inverted V-shaped, situated centrally between coxae III–IV. Anal opening (Fig. 1B) far posterior to genital opening, about as long as genital opening, surrounded by 3 pairs of pseudanal setae, lengths: *ps*<sub>3</sub>= 16, *ps*<sub>2</sub>= 15, *ps*<sub>1</sub>= 45. Copulatory opening posterior to anus; spermathecal duct a cylindrical tube, widening as it's base and reaches spermathecal sac; base of spermathecal sac, sclerites not seen.

Leg (Fig. 3). Lengths (I–IV): 127, 136, 148 and 155; all setae on trochanters, femora, genua, tibiae and basal two thirds of tarsi smooth and attenuate. Chaetotaxy of legs I–IV: trochanter 1, 1, 1, 0; femora 1, 1, 0, 0; genua 2 + 2 $\sigma$ , 2 + 1 $\sigma$ , 1 $\sigma$ , 0; tibiae 1 + 1 $\Phi$ , 1 + 1 $\Phi$ , 1 + 1 $\Phi$ , 1 $\Phi$ ; tarsus I with 4 filiform setae (*wa*, *ra*, *la* and *d*); tarsus II with 2 filiform setae (*wa* and *d*); tarsus III with 1 filiform seta (*d*); tarsus IV with 3 filiform setae (*w*, *r* and *d*).



**FIGURE 3.** *Oulenzia arboricola* (Oudemans, 1928) (female). **A**, leg I; **B**, leg II; **C**, leg III; **C'**, tip of tarsus III; **D**, leg IV.

Leg I (Fig. 3A). Trochanter with 6 minute teeth on anteromedial edge; femur 34, *vF* filiform, 31; genu 24, solenidia  $\sigma'$  4,  $\sigma''$  54;  $\sigma''$ :  $\sigma'$ = 13.5, setae *cG*= 29, *mG*= 26, respectively; tibia 18,  $\Phi$  76, *gT* 22, *hT* absent; tarsus I (excluding pretarsus) 51 long, basal width 10,  $\omega_1$  parallel sided and slightly

expanded at its apex, 11 long,  $\varepsilon$  2,  $\omega_2$  5,  $\omega_3$  8, setae *wa* 22, *ra* 23, *la* 19, *d* 7, *e* and *f* absent; ventro-terminal spines: *s* 1.5, *p* and *q* with only alveoli present; *u* and *v* conical, 2.5; membranous empodium 7, claw 4.

Leg II (Fig. 3B). Trochanter also has 6 minute teeth on anteromedial edge; femur 37, *vF* 28; genu 23,  $\sigma$  7, *cG* 19, *mG* 26; tibia 15,  $\Phi$  whip-like, 77, *gT* 22, *hT* absent; tarsus 58 long, basal width 10;  $\omega$  parallel sided and slightly expanded at its apex, 12 long, *wa* 20, *d* 9, *la*, *ra*, *e* and *f* absent; ventro-terminal spines: *p* and *q* with only alveoli present; *s*, *u* and *v* conical, 2; membranous empodium 7, claw 4.

Leg III (Fig. 3C). Femur 30; genu 25,  $\sigma$  tiny (2), shorter than 1/3 distance between its base to apical rim of genu, *nG* absent; tibia III 17,  $\Phi$  whip-like, 49, *kT* 20; tarsus 74 long, 10 wide at base, ratio length: width = 7.4; *d* 5; *w*, *r*, *e* and *f* absent; ventro-terminal spines: *p* and *q* absent; *s*, *u* and *v* conical, 2; empodium 7, claw 4.

Leg IV (Fig. 3D). Femur 32; genu 24; tibia 20,  $\Phi$  whip-like, 35, *kT* absent; tarsus 72 long, 9 wide at segment base, ratio length: width = 8, *w* 17, *d* 8; *r* spiniform, 5; *e* and *f* absent; ventro-terminal spines: *p* and *q* absent; *s*, *u* and *v* conical, 2; empodium 6, claw 4.

#### Remarks

*Oulenzia arboricola* is distinct from the other two known species, *O. bakeri* Hughes, 1962 and *O. gossypii* Meyer & Rodrigues, 1965 in having the following setae absent: *hT* on tibiae I and II, *kT* on tibia IV; *la* and *ra* on tarsus II, *w* and *r* on tarsus III, *e* and *f* on tarsi I-IV; and in having seta *d* on tarsi III and IV positioned at level of apical 1/3 of segment. These characters were also observed in an undescribed species of *Oulenzia* collected on *Lansium domesticum*, from Jasin Malaka State, Malaysia.

#### Redefinition of genus *Oulenzia* (Oudemans, 1928)

*Lenzia* Oudemans, 1928: 327 (nom. preocc.), renamed as *Oulenzia* by Radford, 1950: 152.

*Oulenzia* Radford, 1950: 152; Baker & Wharton, 1952: 342; Meyer & Rodrigues, 1965: 216; OConnor, 2009: 576.

Type species: *Lenzia arboricola* Oudemans, 1928, 327–328.

**Diagnosis.** FEMALE. Ocelli present; prodorsal shield slightly widened posteriorly; setae *sce* more than 6× as long as *sci*; supracoxal setae *scx* spiniform, without obvious barbs; tarsi (excluding pretarsi) more than 5× as long as their basal width. Genu I with solenidion  $\sigma''$  more than 5× as long as  $\sigma'$ ;  $\sigma$  on genu III tiny, less than half distance from its base to tip of genu III; seta *d* on tarsi III and IV positioned at level of apical 1/3 of tarsi. Chaetotaxy of legs I–IV: trochanter 1, 1, 1, 0; femora 1, 1, 0, 0; genua 2 + 2 $\sigma$ , 2 + 1 $\sigma$ , 1 $\sigma$ , 0; tibiae 1 + 1 $\Phi$ , 1 + 1 $\Phi$ , 1 + 1 $\Phi$ , 1 $\Phi$ ; tarsus I with 4 filiform setae (*wa*, *ra*, *la* and *d*); tarsus II with 2 filiform setae (*wa* and *d*); tarsus III with 1 filiform seta (*d*); tarsus IV with 3 filiform setae (*w*, *r* and *d*).

Male, larva and nymph. Unknown.

**Remarks.** *Oulenzia arboricola* is unique in having some tibial setae (I *hT*, II *hT* and IV *kT*) and tarsal setae (II *la*, II *ra*, III *w*, and *f* and *e* on all tarsi) missing, which indicates the need to establish a new genus for *Oulenzia bakeri* and *O. gossypii*.

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