

Shamshevia hannahae, a striking new species and biogeographical anomaly from Fiji (Diptera: Dolichopodidae: Diaphorinae)

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Abstract. *Shamshevia hannahae* (Diptera: Dolichopodidae: Diaphorinae) is newly described from the islands of Viti Levu and Kadavu in the Fiji Group. It is characterised by a halberd-shaped postpedicel in both sexes (larger in males), an enlarged silvery male palp, and two projecting setae on sternite 8. The distinctive hypopygial structure and elongate male postpedicel place the species in *Shamshevia*, which is otherwise known from Namibia, United Arab Emirates, Israel and Goa. The genus *Shamshevia* Grichanov, 2012 is regarded as a senior synonym of *Arabshamshevia* Naglis, 2014, **n. syn.**, with the resulting new combinations: *Shamshevia ajbanensis* (Naglis), **n. comb.**, and *Shamshevia negevensis* (Grichanov), **n. comb.**

INTRODUCTION

The Fijian fauna of the family Dolichopodidae has proven to be very rich, the direct result of long-running Malaise traps set throughout the archipelago, part of the joint NSF-Schlinger Foundation sponsored Fiji Terrestrial Arthropod Survey (Evenhuis & Bickel 2005). Some of these taxa have proven to be generic endemics or biogeographically unusual taxa.

This paper describes a new species of *Shamshevia* Grichanov whose males have an elongate halberd-shaped postpedicel and enlarged silvery palps. The genus otherwise is only known from Namibia, United Arab Emirates, Israel and Goa.

MATERIAL AND METHODS

This study is based on material housed in the Bishop Museum, Honolulu (BPBM). Photographs were made with a Leica M205A photomontage system. In describing the hypopygium, or male genital capsule, 'dorsal' and 'ventral' refer to morphological position prior to genitalic rotation and flexion. Thus, in figures showing a lateral view of the hypopygium, the top of the page is morphologically ventral, while the bottom is dorsal. Morphological terminology follows Cumming & Wood (2017). Measurements were made on representative dry specimens. Body length of males is measured from the base of the antennae to the tip of the seventh abdominal segment. The CuAx ratio is the length of the dm-m crossvein/ distal section M₄. The position of features on elongate structures such as leg segments is given as a fraction of the total length, starting from the base. The relative lengths of the podomeres are representative ratios and not measurements and are given for each leg in the following formula and punctuation: trochanter + femur; tibia; tarsomere 1/ 2/ 3/ 4/ 5. The following abbreviations and terms are used: MSSC - Male secondary sexual character(s), the non-genitalic character(s) found only on male body; I, II, III: pro-, meso-,

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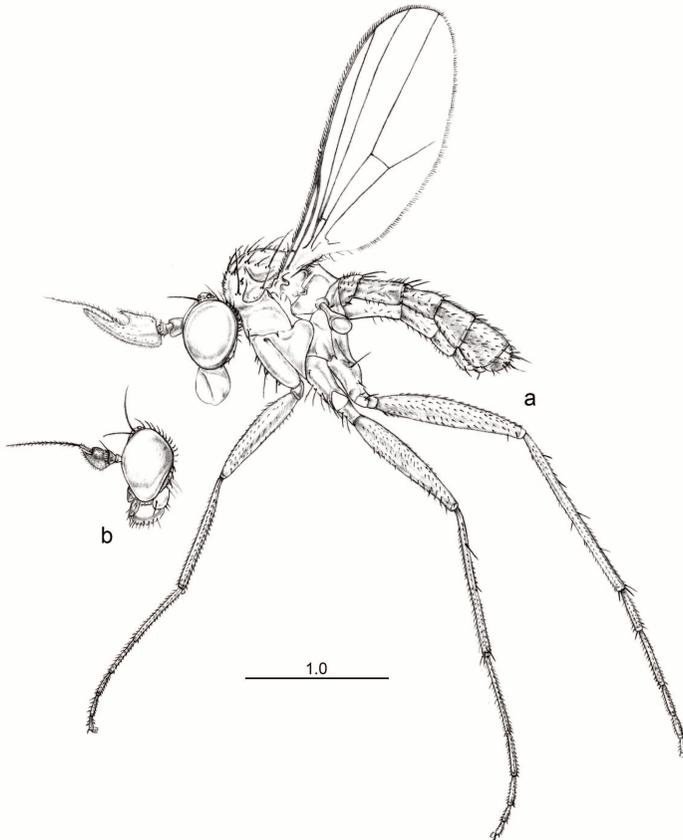


Fig. 1. *Shamshevia hannahae* n. sp.: a. male habitus, left lateral; b. female head, left lateral.

metathoracic legs; C, coxa; T, tibia; F, femur; ac, acrostichal setae; ad, anterodorsal; av, anteroventral; dc, dorsocentral setae; dv, dorsoventral; hm, postpronotal setae; t, tarsus; t_{1-5} , tarsomeres 1 to 5; CuAx ratio is the length of dm-m crossvein over distal vein R_4 .

SYSTEMATICS

Genus *SHAMSHEVIA* Grichanov

Shamshevia Grichanov, 2012a: 558. Type species: *Shamshevia hoanibensis* Grichanov, 2012, orig. des.

Arabshamshevia Naglis, 2014: 726. Type species: *Arabshamshevia ajbanensis* Naglis, 2014, orig. des., n. syn.

Generic synonymy. Grichanov (2012a) described the genus *Shamshevia* based on a species collected in Namibia, while Naglis (2014) described *Arabshamshevia* based on a species collected in the United Arab Emirates. The two genera are very close except acrostichal setae are present in *Shamshevia* but totally absent in *Arabshamshevia*. Grichanov (2016) discussed this matter in detail and even stated, “Therefore, the two genera may be regarded as possible synonyms.” However, he did not formally place them in synonymy. With respect, I feel the two genera should be regarded as synonyms, as the loss of acrostichal setae by itself does not constitute strong evidence for generic separation when so many other characters are similar among the two genera. The absence of acrostichal setae is a loss character, possibly of significance for defining species groups.

Diagnosis: Body length 1.8–2.6 mm; face and clypeus wide, slightly convergent ventrally; eyes well separated; scape subtriangular, with short pointed ventral projection; male postpedicel strongly elongate, often bladelike or subtriangular, swollen at base, laterally flattened and tapering distally; arista bare; ac present as short pairs or absent; 5 pairs of dc; legs mostly bare of major setae; vein M complete, joining costa anteriorly of wing apex; crossvein dm–cu weak, located variously, but frequently near wing base; sternite 8 sometimes 2 strong posterior projecting setae; epandrium subcircular; epandrial lobe elongate, subrectangular with 2 strong projecting distal setae; surstylus with projecting, almost clavate ventral arm with distal setulae, and shorter curved dorsal surstylar arm with 2 short apical setae; postgonite elongate and curved, almost hook-like; cercus short; oviscapt with fused epiproct bearing 5 pairs of blade-like acanthophorites.

Genus *Shamshevia* Grichanov, included species:

ajbanensis (Naglis), 2014: 726. (*Arabshamshevia*), **n. comb.**, United Arab Emirates.

hannahae Bickel, **n. sp.** Fiji.

hoanibensis Grichanov, 2012a: 561. Namibia.

negevensis (Grichanov), 2016: 94. (*Arabshamshevia*), **n. comb.**, Israel.

reshchikovi Grichanov, 2012b: 65. Goa.

Remarks. The genus *Shamshevia* has an unusual distribution and range of ecological associations. Four of the species are known from the western part of the Old World, southern Africa, the Indian Peninsula and arid lands north of the Arabian Sea, while the new species *S. hannahae* is from the Fiji islands some 12,000 km to the east. The Fijian occurrence is noteworthy as the genus is unknown from the intervening eastern Oriental and Australasian regions. So it remains a disjunct, possibly the result of extinction in the intervening area. In addition, the ecological habitats of the five species are varied. Three are from arid regions: *Shamshevia ajbanensis* (United Arab Emirates, al-Ajban), *S. hoanibensis*, (Namibia, Skeleton Coast), and *S. negevensis* (Israel, Negev Desert). By contrast, *S. reshchikovi* (Goa, Indian Peninsula) is from tropical monsoonal habitat, while *S. hannahae* (Fiji) is from moist tropical lowland rainforest.

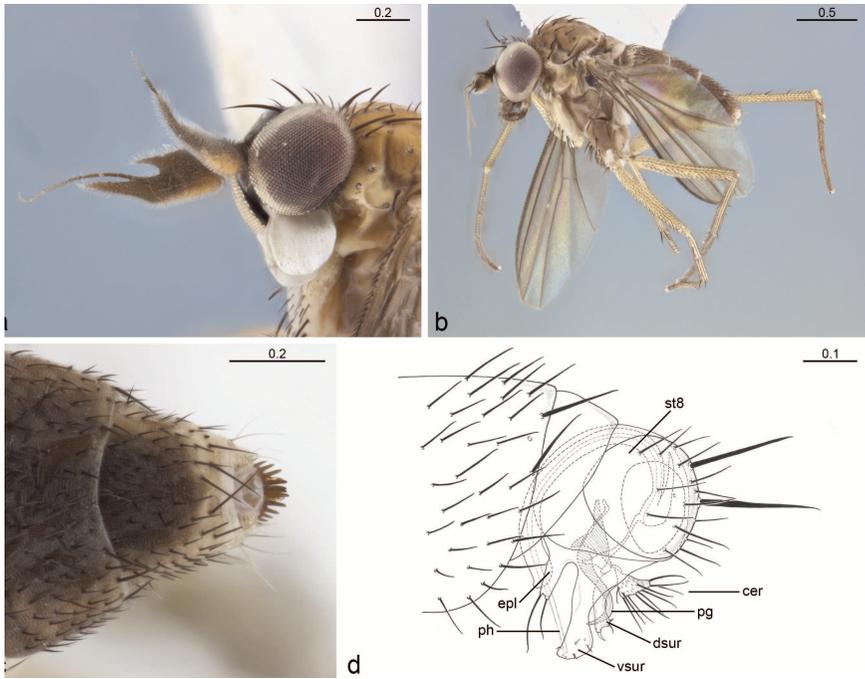


Fig. 2. *Shamshevia hannahae* n. sp.: a. male head, left anterior; b. female habitus, left lateral; c. female oviscapt, dorsal; d. male postabdomen, left lateral. Legend: cer, cercus; d.sur, dorsal surstylus; epl, epandrial lobe; pg, postgonite; ph, phallus; st8, sternite 8; v.sur, ventral surstylus.

***Shamshevia hannahae* Bickel n. sp.**

lsid:zoobank.org:act:C03AC54B-37D1-45A0-9D19-A05382ADCA72

(Figs 1a, b, 2a–d)

Description. Male. Body length 1.9–2.0 mm; wing: 1.9×0.7 mm.

Head (Fig. 2a). Head wider than high in anterior view; frons dark dull metallic blue-green with grey pruinosity; pair of strong divergent ocellar setae with tiny post-ocellar setae; pair of strong convergent and proclinate vertical setae; pair of postvertical setae, around a third of the length verticals; postocular setae short, dorsally black and ventrally whitish; face and clypeus as wide as antennal bases, not noticeably narrowed, with yellowish pruinosity; eyes with anteroventral facets enlarged; palp greatly enlarged, without external setae, almost circular and covered with reflective silvery pruinosity (MSSC); proboscis yellowish, hidden between palps; scape and pedicel dark brown; pedicel with subapical corona of short setae with strong dorsal seta; postpedicel yellow basoventrally, distally brown, covered with short pubescence and strongly modified: halberd-shaped, longer than head height, and with wide base which continues ventrally as tapering bladeliike projection, and dorsally as sharp triangular point, between which is U-shaped excavation (MSSC); arista pubescent, arising near base of U-shaped excavation and as long as antenna; ventral postcranium with fine yellowish setae.

Thorax. Almost entirely dull yellow except brownish ac band with expands laterally across posterior mesonotal slope, and pleura brown, although yellowish on some specimens; scutellum with brown basal hemi-circle and yellow margin; setae black; ac present as 6–7 short irregular setal pairs; 5 dc present, four strong setae and with weak but distinct dc seta anterior of posteriormost pair; 1 postalar, 2 postsutural supra-alar, 1 presutural intra-alar, 2 notopleural, 1 presutural supra-alar, and 1 weak postpronotal setae present; upper proepisternum bare without evidence of seta, proepisternum with black seta above coxa I; median scutellar setae strong, lateral scutellar setae absent.

Legs. CII mostly brown; CI and CIII yellow and remainder of legs yellow, with only distalmost tarsomeres infuscated; setae black; CI with three strong lateral setae, at $\frac{1}{2}$, $\frac{3}{4}$, and $\frac{7}{8}$, and with some short additional setae (e.g., Figs 1a, 2b), CII short anterior setae and strong distolateral seta; CIII with strong lateral seta at $\frac{1}{3}$; claws and pulvilli short; legs mostly bare of major setae except where noted; I: 2.9; 2.8; 1.7/ 1.0/ 0.7/ 0.4/ 0.3; FI with short subapical pv seta; tarsus I unmodified; II: 3.2; 3.3; 1.8/ 0.7/ 0.6/ 0.4/ 0.3; TII with strong ad seta at $\frac{1}{4}$ and subapical corona of short ad, av, ventral and pv setae; III: 4.0; 4.2; 0.9/ 1.3/ 0.7/ 0.4/ 0.3; TIII with ad seta at $\frac{1}{5}$ and dorsal row of 5 short, spaced setae.

Wing. Hyaline; veins R_{4+5} and M_1 subparallel beyond crossvein dm-m, with vein M_1 joining costa just behind wing apex; CuAx ratio: 0.4; lower calypter yellow with 3 strong black setae; halter yellow with slightly infuscated club.

Abdomen. Cylindrical, tergites 1–5 brown, but sometimes yellow laterally and tergites 4–5 yellow ventrally; tergites covered with short black setae and tergite 1 only with 6 strong black marginal setae; sternites yellow; postabdomen (Fig. 2d) including hypopygium yellow; sternite 8 ovate covering left lateral hypopygial foramen, with 2 strong black posterior projecting setae; epandrium subcircular; hypandrium forming short hood over phallus; epandrial lobe elongate, subrectangular with 2 strong projecting distal setae; surstylus with projecting, almost clavate ventral arm with distal setulae, and shorter curved dorsal surstylar arm with 2 short apical setae; postgonite elongate and curved, almost hook-like; cercus short, distally expanded subtriangular and numerous projecting elongate marginal setae.

Female (Figs 1b, 2b–c). Similar to male except as noted: head more ovate in lateral view; face broad, as wide as antennal bases, and covered with yellowish pruinosity; facets uniform; postpedicel also halberd shaped, but much smaller and without dorsal point (Fig. 1b); leg colouration, relative podomere ratios, and setation (including setation of coxa I) similar; oviscapt (Fig. 2c) with sternite 8 enlarged and epiproct fused bearing 5 pairs of blade-like acanthophorites.

Types. Holotype ♂, FIJI: **Viti Levu:** *Naitasiri Province:* 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, lowland wet forest, [-18.055, 178.424], 372 m, 17 Mar–9 Apr 2003, Malaise trap: M03, Timoci (FBA 143700); paratypes, 2♂, same but 24 Apr–12 May 2004 (FBA_065302, 065311); paratypes 2♀, same but [-18.056, 178.422], 325 m, 14 Jul–28 Jul 2003 & 25 Feb–17 Mar 2003, Malaise trap: M02, (FBA 094799, 102318) (all BPBM).

Other (non-type) material. FIJI: **Kadavu:** *Kadavu Province:* 1♂, Solodamu Village, coastal limestone forest, [-19.067, 178.117], 128 m, 25 Aug–23 Oct 2003, Malaise trap: M01, M.E. Irwin, E.I. Schlinger, M. Tokota'a (FBA_010413, 14901); 1♀, 0.25 km SW Solodamu Village, Moanakaka Bird Sanctuary, coastal limestone forest, [-19.078, 178.121], 60 m, 23 Oct–19 Dec 2003, Malaise trap: M02, S. Lau (FBA_131907, 14901). **Viti Levu:** *Rewa Province:* 1♀, 4 km NW Lami Town, Mt Korobaba, lowland wet forest, [-18.102, 178.383], 400 m, 15 Nov–1 Dec 2004, Malaise trap: M03, K. Koto (FBA 503962). *Vuda Province:* 1♂, Koroyanitu EcoPark, Mt Evans Range, 1 km E Abaca

Village, Kokabula Trail, disturbed mid-elevation moist forest, [-17.667, 177.55], 800 m, 22 Apr–6 May 2003, Malaise trap: M01, L. Tuimereke (FBA_174922) (all BPBM).

Remarks. *Shamshevia hannahae* is known from Malaise traps set in rainforest sites on the islands of Viti Levu and Kadavu, Fiji. Males have enlarged silvery pruinose palps and a striking halberd-shaped antennal postpedicel (Figs 1a, 2b), both of which are diagnostic for this species. The strongly modified male postpedicel appears smaller and less-modified in females (Fig. 2b), without the cuticular point dorsad of the arista. Also of note are the two long posterior setae on sternite 8 (Fig. 2d), sometimes broken off specimens.

Shamshevia hannahae has the dm-m crossvein near the mid-wing and the CuAx ratio about 0.4, while in its four congeners, the dm-m crossvein is close to the base of the wing, with CuAx ratio < 0.2. Also *S. hannahae* has two projecting setae on sternite 8, which are not clearly seen on the other *Shamshevia* species, although these setae are easily broken off.

Etymology. *Shamshevia hannahae* is named in honour of Hannah Mathews (*née* Finlay) for her superb pen and ink illustrations composed over the years for my Diptera manuscripts, two of which (Figs 1 and 2d) are presented here.

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