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***Korotongo*, a new genus from Fiji, Tonga and Samoa, and a new species of *Phacaspis* Meuffels & Grootaert from Micronesia (Diptera: Dolichopodidae)**

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Abstract. A new monotypic genus, *Korotongo pacifica* is described from specimens collected in Fiji, Tonga and American Samoa, and is provisionally referred to the subfamily Peloropeodinae. As well *Phacaspis palauensis* is newly described from the Micronesian island groups of Palau and Yap. *Phacaspis* Meuffels and Grootaert is known from the Australasian and Oriental regions. Both genera are associated with marine littoral and mangrove habitats.

INTRODUCTION

This paper describes a new genus, *Korotongo* Known from Fiji, Tonga and American Samoa and a new species in the genus *Phacaspis* Meuffels and Grootaert, which is known from the Australasian and the Oriental regions. Both genera appear to be associated with marine littoral habitats and mangroves.

MATERIAL AND METHODS

Repositories of material in this study are referred to by the following acronyms: (AMS), Australian Museum, Sydney; (BPBM), Bishop Museum, Honolulu; (NZAC), New Zealand Arthropod Collection, Auckland; (USNM), National Museum of Natural History, Smithsonian Institution, Washington, D.C.

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 M_4 . 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-, metathoracic legs; C, coxa; T, tibia; F, femur; ac, acrostichal setae; ad, anterodorsal; av, anteroventral; dc, dorsocentral setae; dv, dorsoventral; t, tarsus; t_{1-5} , tarsomeres 1 to 5; CuAx ratio is the length of dm-m crossvein over distal vein R_4 .

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SYSTEMATICS

Genus *Korotongo* Bickel, new genus

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(Fig. 1a–e)

Type species. *Korotongo pacifica* Bickel **new species**, here designated.

Etymology. *Korotongo* is an indigenous place name on Viti Levu where the type series was collected, and the gender is feminine.

Diagnosis. Genus *Korotongo* (this generic diagnosis is based on a single species and emphasizes characters considered to be of generic importance). Body length about 1.8 mm; wing length about 2.0. *Head* (Fig 1b). Subcircular in anterior view; dorsal postcranium flat; both sexes with face and clypeus wide and protruding, with facial-clypeal suture marked by distinct ridge and decumbent clypeus; scape bare, pedicel projecting into socket-like base of postpedicel, in both median and lateral view; postpedicel with subapical invagination encircling segment.

Thorax. Posterior mesonotum distinctly flattened; ac irregularly uniseriate; 5 strong dc present; proepisternum bare; lateral scutellar setae absent.

Legs. TI with short dorsal setae; FII and FIII both with strong anterior preapical seta, but without posterior preapical seta; TII with very strong anterior seta at $\frac{1}{4}$ (in both sexes).

Wing. R_{4+5} and M_1 subparallel; vein M_1 with flexion or *bosse alaire*; CuAx ratio: 0.2.

Abdomen. Male segment 7 well-developed and forming peduncle; hypopygium (Fig. 1d, e); epandrium short subrectangular; epandrial lobe elongate, with short apical seta and longer seta at mid-length; surstylus elongate subrectangular, and apically incurved and pointed; cercus elongate digitiform. Female oviscapt (Fig. 1c) relatively narrow subtriangular, tergite 9+10 divided into two acanthophorites, each bearing three blunt spines.

Morphological notes

Korotongo has a number of morphological features that require further discussion.

1. *Postpedicel enclosing the pedicel.* In both sexes of *Korotongo* the antennal pedicel has a conus protruding into a socket-like postpedicel, visible in both lateral and median views (Fig 1b). This encapsulation of the conus by the postpedicel is characteristic of several genera in the Sympycninae, but in these cases, the enclosure is visible only in the median view, the lateral view showing the pedicel truncate with the postpedicel: 1) the cosmopolitan genus *Syntormon* Loew; 2) the predominately Nearctic genus *Parasyntormon* Wheeler; and 3) the monotypic North African genus *Ceratopos* Vaillant. The genus *Minjerribah* Bickel (Hydrophorinae), genus *Tenuopus* Curran (Tenuopodinae) and the incertae sedis genus *Dactylonotus* Parent also have the conus of the pedicel protruding medially into a socket-like postpedicel, although in *Dactylonotus* the socket is more dorsally positioned.

2. *Postpedicel with subapical invagination.* In both sexes of *Korotongo* the antennal postpedicel has a subapical invagination which encircles the segment and almost covering the base of the arista (Fig. 1b). I have not encountered this modification of the postpedicel on other dolichopodid taxa.

3. *Protruding clypeus.* In *Korotongo* (Fig. 1b), both sexes have the face and clypeus wider than the width of the antennal bases and protruding, with the facial-clypeal suture marked by distinct ridge and a decumbent clypeus. Many other dolichopodids have a tectiform or

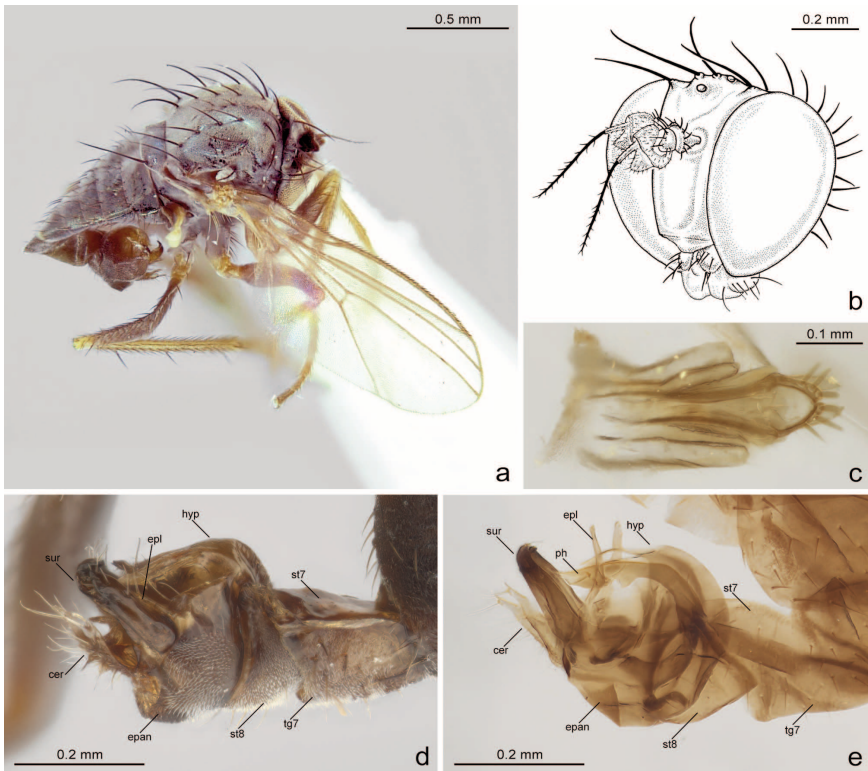


Figure 1. *Korotongo pacifica* n. sp. **a.** male habitus, right dorsal; **b.** male head, left anterior; **c.** female oviscapt, dorsal; **d.** male postabdomen, left lateral; **e.** male postabdomen, cleared, left lateral. Legend: cer, cercus; epan, epandrium; epl, epandrial lobe; hyp, hypandrium; ph, phallus; st, sternite; sur, surstylus; tg, tergite.

protruding roof-like clypeus (many females of the subfamily Sympycninae, and both sexes of many Hydrophorinae and some genera of Dolichopodinae) but the clypeus is projected outwards and not decumbent as in *Korotongo*.

4. *Absence of strong MSSC.* Apart from the male postabdomen, there are few evident male secondary sexual characters in *Korotongo pacifica*. The strong anterior seta at $\frac{1}{4}$ on tibia II (the kind of character that possibly might occur as a MSSC in some dolichopodid taxa), is found on both sexes of *Korotongo pacifica*.

Subfamilial placement

Korotongo shares a number of character states with the subfamily Peloroepodinae, including anterior preapical setae on femora II and III, a flattened posterior mesonotum, and an enlarged pedunculate hypopygium (see summary in Yang *et al.* 2006). However, the subfamily is poorly defined and comprises a number of disparate genera with a wide range of hypopygial morphology, so the placement of this genus in the Peloroepodinae should be regarded as provisional.

***Korotongo pacifica* Bickel new species**

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(Fig. 1a–e)

Description. Male (Fig. 1a). Body length: 1.7–1.8 mm; wing: 2.1×0.7 mm.

Head (Fig. 1b). Subcircular in anterior view, but slightly wider than high, and rather narrow in lateral view; postcranium flat, not concave; vertex, frons and face dark brown and covered with dense grey pruinosity; setae black; postoculars forming single row of short black setae from vertex until about one-quarter from eye base, and with only fine hairs ventrad; pair of postvertical setae on dorsal postcranium; pairs of strong vertical and diverging ocellar setae present; face and clypeus wider than width of antennal bases and protruding, with facial-clypeal suture marked by distinct ridge and decumbent clypeus; eye facets uniform with tiny hairs between facets; palp ovate with grey pruinosity; proboscis dark brown and rather short; antenna dark brown; scape bare, pedicel with corona of short black setae, and projecting into socket-like base of postpedicel, evident in both median and lateral view postpedicel lobate and rounded, with apparent subapical invagination encircling segment, and with dorsal depression from which arista arises; arista shorter than head height.

Thorax. Entirely dark brown with metallic green reflections, with dusting of grey pruinosity; setae black; posterior mesonotum distinctly flattened; ac comprising 6 irregularly uniseriate setae (*i.e.*, not in single straight line); 5 strong dc present, slightly decreasing in size anteriorly; 1 strong postalar, only 1 postsutural supra-alar, 1 presutural intra-alar, 2 notopleural, 1 presutural supra-alar, and 1 weak postpronotal setae present; proepisternum bare; median scutellar setae strong, lateral scutellar setae absent.

Legs. Coxae basally dark brown with some grey pruinosity, but distal coxae, trochanters and femoral bases yellow; femora mostly brown but distal sixth yellow; tibiae and tarsi mostly yellow but distal tarsomeres infuscated; CI and CII with short black anterolateral vestiture; CIII with strong black lateral seta at $2/5$; legs covered with short black vestiture, and stronger setae as noted; I: 2.6; 2.2; 1.0/ 0.7/ 0.5/ 0.5/ 0.4; FI bare; TI with short dorsal setae at $1/3$, $2/3$, and subapically; tarsus I unmodified; II: 2.6; 2.7; 1.7/ 0.6/ 0.5/ 0.4/ 0.3; FII with strong anterior preapical seta, but without posterior preapical seta; TII with very strong anterior seta at $1/4$, short ad-pd setal pair at $1/4$, short ad-pd setal pair at $1/2$, and with subapical circlet of pd, ad, av, and pv setae; tarsus II unmodified; III: 2.5; 3.2; 0.6/ 1.0/ 0.7/ 0.4/ 0.4; FIII with strong anterior seta at $4/5$, but without posterior preapical seta; TIII with strong offset ad and dorsal setae at $1/4$ and $1/2$ and ad seta at $7/8$; tarsus III unmodified.

Wing. Relatively elongate; membrane hyaline; R_{2+3} ending in costa near $9/10$; R_{4+5} and M_1 diverging from base, but closely parallel beyond dm-cu crossvein, with R_{4+5} joining costa anteriorly of apex and M_1 joining at apex; vein M_1 with flexion or *bosse alaire* just beyond join with dm-cu; CuAx ratio: 0.2; anal angle absent; lower calypter yellow with fan of pale yellow; halter pale yellow.

Abdomen: Tergites 1–6 mostly dull metallic green with grey pruinosity; vestiture mostly short dark brown setae, but with some longer marginal setae on tergite 1; segment 7 well-developed and forming peduncle, with tergite 7 hemi-cylindrical and sternite 7 reduced to narrow strip; sternite 8 forming cap over left lateral hypopygial foramen, and with weak yellowish setae; hypopygium (Fig. 1d, e) dark brown with brown cercus; epandrium short subrectangular; hypandrium forming hood over basal epandrium; epandrial lobe elongate, with short apical seta and longer seta at midlength, and arising from ventral surface of epandrium [*cf.*,

epandrial lobe lying along ventral epandrium (Fig. 1d) and epandrial lobe projecting outwards (Fig. 1e)]; surstylus well sclerotized, elongate subrectangular, and apically incurved and pointed; cercus elongate digitiform with abundant yellowish setae.

Female. Similar to male except as noted: face and clypeus slightly wider; head and thoracic setation similar; leg setation similar (including very strong anterior seta on TII) but major female setae more strongly developed than on male; oviscapt (Fig. 1c) relatively narrow subtriangular, tergite 9+10 divided into two acanthophorites, each bearing three blunt spines.

Types. Holotype, ♂, paratypes, 21 ♂, 7 ♀, FIJI: **Viti Levu:** Korotongo [~3.0 km SE Sigatoka], 0–100 m, Mar 1974, N.H.L. Krauss (USNM, 2 ♂, 1 ♀ paratypes each deposited BPBM, AMS).

Additional material. AMERICAN SAMOA: 1 ♂, **Tutuila:** Taputimu, 13 Oct 1944, N.R. Spencer (BPBM). FIJI: **Viti Levu:** 1 ♂, Naqara I, 18°10'59"S 178°15'56"E, 0–10m, coastal littoral vegetation, 21 Jan 2005, D. Bickel (AMS); 1 ♂, Laucala Bay, nr. Suva, 14 Oct 1975, in building, S. Vosabeci (NZAC). TONGA: 2 ♂, **Vavau I:** Neifu, Feb 1956, Jan 1980, N.H.L. Krauss (BPBM).

Remarks. *Korotongo pacifica* s known from lowland and coastal habitats, including littoral vegetation on the Fijian island of Viti Levu, Tonga and American Samoa. Apart from the male postabdomen, this species has few strong or distinctive male secondary sexual characters. Also see Remarks, above.

Etymology. This species is named *pacifica* for the Pacific Island groups of Fiji, Tonga, and Samoa, where the species was collected.

Genus *PHACASPIS* Meuffels & Grootaert

Phacaspis Meuffels and Grootaert, 1988: 312.

Type species: *Phacaspis petiolata* Meuffels & Grootaert, 1988.

Remarks. Meuffels and Grootaert (1988) described the genus *Phacaspis* to include two species, *P. petiolata* and *P. ornata*, both from Papua New Guinea. Later, Grootaert and Meuffels (2001) described a third species, *P. mitis* from Thailand, and extended the range of *P. petiolata* from New Guinea to Thailand. A new species, *P. palauensis*, is described from Micronesia. All species are known from mangrove habitats.

Phacaspis is defined by the clypeus arising about midway along head height, with the facial-clypeal suture marked by a distinct ridge, and laterally widened, almost trapezoidal in shape (similar to Fig. 2b); mesonotum slightly flattened posteriorly; ac absent; and only 3 or 4 strong dc. The three previously described species and the new species treated below can be divided into two distinct groups:

- 1) *Phacaspis petiolata* and *P. mitis*, both with an ovate epandrium, digitiform surstylus and simple unbranched cercus.
- 2) *Phacaspis ornata* and *P. palauensis*, both with epandrium short subrectangular; hypandrium forming short, inflated hood over base of epandrium, ventral surstylus sclerotized and elongate, and cercus pale yellow and elongate with abundant pale yellow setae.

Phacaspis palauensis Bickel n. sp.

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(Fig. 2a–c)

Description. Male: length 1.4–1.5 mm; wing: 1.3×0.4 mm.

Head. Ovate, higher than wide in anterior view; postcranium flat; frons dark metallic blue-green, with a dusting of grey pruinosity; postoculars forming single row of short white setae from vertex until about one-quarter from the base of eye; pair of converging postvertical setae on dorsal postcranium, not in line with postocular setae; pairs of strong vertical and diverging ocellar setae present; face very short, and wider than width of antennal bases; clypeus arising about midway along head height (or greatly extended basally), with facial-clypeal suture marked by distinct ridge, and laterally widened, almost trapezoidal in shape, and slightly tapering distally (similar to Fig. 2b) and covered with silvery pruinosity; eye with anteroventral facet enlarged, with tiny hairs between facets; palp and proboscis brownish; scape and pedicel yellow, postpedicel dark brown; postpedicel short subtriangular with dorsal arista; arista as shorter than head height.

Thorax. Dark brown with metallic green reflections, with dusting of grey pruinosity; pleura dark brown; posterior mesonotum only weakly flattened; ac absent; 3 strong dc present; 1 strong postalar, only 1 postsutural supra-alar, 1 presutural intra-alar, 2 notopleural, 1 presutural supra-alar, and 1 weak postpronotal setae present; proepisternum bare; median scutellar setae strong, lateral scutellar setae absent.

Legs. CI pale yellow, CII and CIII dark brown; trochanters and remainder of legs pale yellow; leg setae brownish; CI with some anterolateral setae; CIII with lateral seta near $\frac{1}{2}$; I: 2.0; 1.7; 0.8/ 0.3/ 0.4/ 0.4/ 0.3; FI ventrally with weak spaced hairs and longer subapical av and pv seta; TI gradually becoming ventrally swollen on basal three fifths, and decreasing distally (MSSC); II: 2.3; 2.2; 0.9/ 0.5/ 0.3/ 0.2/ 0.3; FII near midlength with 3–4 short ventral setae (MSSC), and in distal quarter with row of 4 anterior setae, with penultimate seta much stronger and equivalent to anterior preapical seta, and with short preapical pv seta; TII with short vestiture and with pd seta at $\frac{1}{3}$ and with strong anterior seta near $\frac{1}{2}$; III: 2.7; 2.3; 0.5; 0.7/ 0.9/ 0.4/ 0.3/ 0.4; FIII near mid-length with row of 6–7 short black av setae (MSSC), and with short anterior preapical seta and weaker posterior preapical seta; TIII with strong anterior seta near $\frac{2}{5}$ (MSSC) and at $\frac{5}{6}$ with basally directed ventral seta and at $\frac{7}{8}$ with slightly distally projecting ventral seta at $\frac{7}{8}$ (MSSC).

Wing. Membrane hyaline; R_{2+3} ending in costa near $\frac{3}{4}$; R_{4+5} and M_1 diverging from base, but parallel beyond dm-cu crossvein, with slight flexion of R_{4+5} before joining costa anteriorly of apex, and M_1 joining at apex; vein M_1 without evident flexion or *bosse alaire*; CuAx ratio: 0.3; anal angle absent; lower calypter yellow with fan of pale yellow; halter pale yellow.

Abdomen. Mostly dark brown with short brownish vestiture and tapering distally; segment 7 well-developed and forming peduncle; hypopygium (Fig. 2c); epandrium short subrectangular; hypandrium forming short almost inflated hood over base of epandrium; ventral surstylus well sclerotized, elongate, and lobate; dorsal surstylus pale yellow projection with 3–4 long apical setae; cercus pale yellow, elongate and strongly recurved and S-shaped, with abundant pale yellow setae.

Female: similar to male, except as noted: clypeus wider (Fig. 2b); thorax and legs coloration and setation similar, except TI unmodified, FII with row of av setae; TII also with strong anterior seta near $\frac{1}{2}$; FIII ventrally bare; TIII with short ad seta at $\frac{1}{5}$, but without strong anterior seta and modified ventral setae.



Figure 2. *Phacaspis palauensis* n. sp. **a.** male habitus, left lateral; **b.** female head, anterior; **c.** male postabdomen, left lateral.

Types. PALAU: Holotype, ♂, paratypes, 3♀, **Oreor** (= Koror): limestone ridge, 21 Jan 1948, mangrove swamp, Pacific Ent. Survey of Micronesia, H.S. Dybas (USNM); paratype ♂, Koror I., mangroves 24 Apr 1957, C.W. Sabrosky (USNM); paratype ♂, **Babelthaup**, Melekeiok, 23 May 1957,

C.W. Sabrosky (USNM). **Additional material.** FEDERATED STATES OF MICRONESIA: 1♂, **Yap Group:** Yap I, Weloy, 15 Jun 1957, C.W. Sabrosky (USNM).

Remarks. *Phacaspis palauensis* is known from the Micronesian archipelagos of Palau and Yap, and where indicated, from mangrove habitat. This species is close to the widespread *P. ornata* Meuffels and Grootaert, which ranges from Papua New Guinea to Thailand and also inhabits mangroves. Male of both species have a white elongate cercus and tibia I ventrally swollen, but *P. palauensis* (Fig. 2c) has a lobate ventral surstylus and strongly recurved elongate cercus, while *P. ornata* (figs 5, 6 in Meuffels & Grootaert 1988) has the ventral surstylus narrow and bladeliike and the cercus elongate and almost flagelliform.

Etymology. The specific epithet *palauensis* is from Latin, meaning “of” or “from” Palau.

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