A NEW BLACKFLY SPECIES OF *SIMULIUM* (*MOROPS*) FROM SOLOMON ISLANDS, SOUTH PACIFIC (DIPTERA: SIMULIIDAE)

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Abstract: A new blackfly species, *Simulium (Morops) kerei* sp. nov. is described based on male and pupal specimens collected from the Solomon Islands, South Pacific. This species is placed in the *farciminis*-group by the pupal gill consisting of 1 inflated, horn-like filament and 4 slender filaments. This species is unique in possessing the parameral hooks in the male genitalia which are absent in all the Papua New Guinean *Morops* species. From the known species of the *farciminis*-group, this species is easily distinguished by the absence of the distinct hair crest on the male fore basitarsus, and in the pupa by the plate-like terminal hooks, all terga well-sclerotized, and the normal, wall-pocket-shaped cocoon covering whole of the thorax and abdomen. This is the first record of the *farciminis*-group of the subgenus *Morops* from the Solomon Islands.

In the Solomon Islands, South Pacific, Stone and Maffi (1971) reported two species of the subgenus *Morops* Enderlein (i. e., *Simulium (M.) sherwoodi* Stone and Maffi, and *S. (M.) sp. nr. avilae* Smart and Clifford) from Guadalcanal Island. In 1992 and 1993 one of us (H. S.) collected larvae, pupae and adults of blackflies in the Solomon Islands. One new species belonging to the subgenus *Gomphostilbia* Enderlein was already described (Takaoka, 1994). In this paper we describe one new species which is placed in the *farciminis*-group of the subgenus *Morops*, defined by Crosskey (1967). The uniqueness of this species within the species-group, as well as within the subgenus is indicated.

DESCRIPTION

Simulium (Morops) kerei sp. nov.

Male. Body length ca. 3.0 mm. *Head*. Width somewhat wider than thorax. Upper eye consisting of large facets in 12 horizontal rows and in 11 vertical columns. Clypeus black, densely covered with hairs (except sparsely in the center). Antenna composed of 2 + 9 segments; 1st flagellomere somewhat elongated, ca. 1.3 × as long as 2nd flagellomere. Maxillary palp composed of 5 segments with proportional length of 3rd, 4th and 5th segments 1.0: 0.9: 2.1; 3rd segment (Fig. 1) of normal size with small, elliptical sensory vesicle which

is 0.22 × length of 3rd segment, and bears small, rounded opening medially. *Thorax*. Scutum brown uniformly and densely covered with yellow pubescence. Scutellum with long dark hairs and yellow pubescence. Postscutellum brown, without hairs. Pleural membrane with ca. 56 yellow pubescence. Katepisternum longer than deep, with ca. 30 dark hairs on each side. *Legs*. Fore basitarsus slightly dilated, ca. 6.0 × as long as wide, with usual dorsal hair crest. Hind basitarsus (Fig. 2) parallel-sided, much narrower than tibia. Calcipala (Fig. 2) well developed, ca. 1.4 × as long as wide and ca. 0.8 × as wide as basitarsus. *Wing*. Costa with spinules and hairs; subcosta bare; basal section of vein R fully haired; hairs at base of stem vein dark brown; basal cell absent. *Abdomen*. Basal scale dark with fringe of long yellow hairs. Abdominal segments 2-9 blackish except segment 2 pale on basal 1/2; tergite 2 broadly shiny when illuminated, and tergites 5-7 each with pair of large dorsolateral shiny areas. *Genitalia* (Figs. 3-7). Coxite rectangular in ventral view, ca. 1.5 × as long as wide. Style short, ca. 3/4 × length of coxite, curved inwards, tapered apically, with terminal spine. Ventral plate (Fig. 3) transverse, narrowed posteriorly, with posterior margin nearly straight or undulate or concave (different by angles) in ventral view, moderately setose on ventral and posterior surface, with short arms converged; ventral plate much produced ventrally as

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Figs. 1-9. Male and pupa of *Simulium* (*Morops*) *kerei* sp. nov. 1, 3rd segment of male maxillary palp showing sensory vesicle; 2, male hind leg (coxa and trochanter omitted); 3, coxite, style (right side only) and ventral plate in ventral view; 4, ventral plate and median sclerite in lateral view; 5, ventral plate in end view; 6, parameres showing distinct parameral hooks in posterodorsal view; 7, median sclerite; 8, pupal gill (right side only) in lateral view; 9, terminal hooks of pupal abdomen in end view.

seen in Figs. 4 & 5. Parameres (Fig. 6) each with 3 distinct parameral hooks and several undeveloped ones. Median sclerite (Fig. 7) plate-like, moderately sclerotized except distal portion transparent.

Pupa. Body length (excluding gill filaments) ca. 3.0 mm. **Head and thorax.** Integument brown, bare except posterior 1/2 moderately covered with small tubercles; antennal sheath of usual form. Head with 1 facial pair of

long, bifid trichomes and 3 frontal pairs of long, simple trichomes. Thoracic trichomes 6 pairs (5 anteriorly, 1 posterolaterally), all long and simple except 3 or 4 anterodorsal pairs bifid. Gill (Fig. 8) with 1 inflated, horn-like filament (0.8-1.0 mm long) and 4 slender filaments (1.0-1.4 mm long) arising at base from dorsal and interolateral surface of horn-like filament; all filaments brown except base of horn-like filament transparent ventrally, and covered uniformly and densely with

minute tubercles; horn-like filament gradually tapered toward apex, thick-walled, irregularly with several annular constrictions; 4 slender filaments very slightly tapered toward apex, with numerous annular furrows. *Abdomen*. All terga brown, sclerotized, with intersegmental transparent space; terga 1 and 2 without tubercles; tergum 1 with long seta on each side; tergum 2 with 6 simple setae on each side, 1 seta much longer than others; terga 3 and 4 each with 4 hooked spines directed forward along posterior margin on each side; terga 6-9 each with spine-combs in transverse row and comb-like groups of minute spines on each side; tergum 5 devoid of spine-comb; tergum 9 with a pair of plate-like terminal hooks which are serrated on outer margins (Fig. 9). Sternum 4 with a simple hook and a few minute setae on each side; sternum 5 with a pair of bifid hooks on each side; sternum 6 and 7 each with a pair of bifid inner and bifid or simple outer hooks; comb-like groups of minute spines present medially and laterally on sternite 4, submedially each on sternum 5-7 and medially on sternite 8; grapnel-like hooklets absent on each side of last segment. *Cocoon*. Simple, wall-pocket-shaped, tightly woven, extending ventrolaterally in some cocoons but not in others, covering whole of thorax and abdomen; anterior margin strongly woven and well defined; floor formed on posterior 1/2.

Female and larva. Unknown.

Type Specimens. Holotype ♂, dissected out of pupa, slide mounted together with pupal exuvia, collected at Noro, New Georgia Island, New Georgia Islands, Western Province, Solomon Islands, 5. IX. 1992, H. Suzuki. Paratypes 1 pharate ♂, 3 pupal exuviae, in alcohol, same data as holotype. Holotype and one of paratypes will be deposited at the Natural History Museum, London, U. K. and other paratypes will be deposited at Bishop Museum, Honolulu, U. S. A., and at the Carnegie Museum Natural History, Pittsburgh, U. S. A.

Ecological notes. The pupae were collected from trailing grass leaves in a small, fast-flowing stream with width of 1-2 m, running in a natural forest, midpoint between Munda and Noro, together with *S. (G.) hiroshii* Takaoka, *S. (M.) sherwoodi* and *S. (M.)* sp.

Etymology. This new species is named after Dr. N. Kere, Permanent Secretary, Ministry of Health and Medical Services, Solomon Islands, for his cooperation.

Remarks. *Simulium (M.) kerei* is assigned to the sub-

genus *Morops* by having hairs on the katepisternum and pleural membrane of the male adult, although female adult and mature larva are not available. This species is further placed in the *farciminis*-group of the subgenus, defined by Crosskey (1967), by the form of the pupal gill which consists of 1 inflated, horn-like filament and 4 slender filaments. However, this species is unique in possessing the distinct parameral hooks in the male genitalia which are absent in all *Morops* species reported from Papua New Guinea and Australia. This species has also a few characters which depart from the diagnoses for the *farciminis*-group: i. e., the absence of distinct dorsal hair crest on the fore basitarsus, the cocoon of no short form but of normal form covering whole of the thorax and abdomen, the pupal terga well sclerotized, and terminal hooks not cone-shaped but plate-like with serrate outer margin. Either of these characters easily separates *S. (M.) kerei* from the known species of this species-group. The pupal gill itself most closely resembles that of *S. (M.) wantoatense* Smart and Clifford from Papua New Guinea (Smart and Clifford, 1965), although in the latter species there are distinct tubercles on the surface of horn-like filament, and 2 of 4 slender filaments arise a little distant from the base of the other 2 filaments. Apart from those characters mentioned above, this species also differs from the latter species by the narrow male hind basitarsus, and the absence of saw-like projections on the pupal antennal sheaths. The male hind basitarsus is enlarged, and pupal antennal sheaths are provided with saw-like projections in *S. (M.) wantoatense* and 4 other related species of the *farciminis*-group (the presence of the latter character has been confirmed in the specimens held in the Natural History Museum, London by H. T.).

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