

**DESCRIPTION OF A PARALECTOTYPE FEMALE OF *Aedes* (*FINLAYA*)  
*NIVEUS* (LUDLOW) (DIPTERA: CULICIDAE)**

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*Abstract.*—A paralectotype female of *Aedes* (*Finlaya*) *niveus* (Ludlow) from Oras, Samar, Philippine Islands is described and illustrated.

*Key Words:* Description, paralectotype, Culicidae, mosquitoes, *Aedes niveus*, vector, filaria, Philippines

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The species concept of *Aedes niveus* (Ludlow) 1903 has been confused in the Oriental Region, for example, the so-called “*niveus*” from India (Tewari and Hiriyan 1995) is not conspecific with the type specimens from the Philippines. Ludlow (1903: 139) originally described this species from females collected in Oras, Samar, Philippines, and placed the species in the genus *Stegomyia* Theobald. Ludlow also sent a specimen along with her description of this species to Theobald to be included in his Monograph (Theobald 1903: 139). Edwards (1932: 154) placed this species in the subgenus *Finlaya*, genus *Aedes* Meigen. In a note, Theobald (1903: 140) stated that “A specimen of this very distinct species has been presented to the Museum by the describer.—F.V.T.” Barraud (1934: 208) reported this same female specimen in the British Museum as the type and the other females in the National Museum of Natural History, Smithsonian Institution (USNM) as “paratypes or cotypes.” Ludlow (1903) in her original description did not designate a holotype and did not mention the exact number of specimens. Knight (1946: 278) reported “Female lectotype in Brit. Mus.;

lectoparatypes (all females) in U.S. Nat. Mus.” In a taxonomic discussion, however, Knight (1946: 278) stated that “This specimen was designated as type (lectotype) by Barraud (1934). A series of three females bearing red type labels (Type No. 27792) exist[s] in the U.S. National Museum.”

We have examined the lectotype female of *Ae. niveus* (Ludlow). This specimen (Oras, Samar, Philippine Is., Cat. Ludlow/*Stegomyia nivea*, Type, Ludlow/LECTOTYPE (small circular white label with a blue border), in The Natural History Museum (NHM), London, unfortunately is in a very bad condition: antenna missing; scutum broken; postpronotum badly damaged; foreleg (right side) missing, foreleg (left side) with tarsomeres 2–5 missing; midleg (right side) missing, midleg (left side) with tibia and tarsomeres 1–5 missing; hindleg (right side) with tarsomeres 2–5 missing, hindleg (left side) missing.

While preparing a computerized key to the vector species of mosquitoes in the Oriental Region, we found among specimens from the Philippines in the USNM a female bearing the labels: (1). Type No. 27792, U.S.N.M. [red type label] and (2). Stego-

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*myia nivea* Ludlow, Oras, Samar, P. I., May–June, C S L., Type (handwritten). This female, the paralectotype of *niveus* (Ludlow) 1903 from Oras, Samar, Philippine Islands, is one of the three females bearing red type labels (Type No. 27792) that exists in the USNM as reported by Knight (1946). Presently, three females are in the USNM; each bears the red type label “Type No. 27792, U.S.N.M.,” and one of these bears the additional label “*Stegomyia nivea* Ludlow, Oras, Samar, P.I., May–June, C S L., Type (handwritten). This female is in rather good condition. Based on a detailed morphological and comparative study of the lectotype and paralectotype, this female specimen (paralectotype) is conspecific with the lectotype female. Neither the lectotype nor the paralectotype of this species has been described in detail. For example, Ludlow (1903) wrote in her original description of *Stegomyia nivea* regarding the type specimens, “Thorax: . . . ; pleurae dark brown, with silvery spots.” Moreover, the lectotype female was badly damaged particularly on the pleuron of thorax which possesses some rather important diagnostic characters. It is thus desirable to give a full description of the paralectotype female so that the identity of Ludlow’s *niveus* will no longer remain in doubt.

The terminology follows Harbach and Knight (1980, 1982), with the exception of “tarsal claws,” which is retained for “ungues.” The venational terms follow those of Belkin (1962).

*Aedes (Finlaya) niveus* (Ludlow)  
(Fig. 1)

*Stegomyia nivea* Ludlow 1903: 139 (F).

Type locality: Oras, Samar, Philippine Islands, May–June, 1902.

Paralectotype female/Type No. 27792, U.S.N.M. (red type label)/*Stegomyia nivea* Ludlow, Oras, Samar, P. I. May–June, C S L., Type (handwritten). Deposited in the USNM.

Female.—*Head*: Proboscis dark-scaled,

without pale scales on ventral surface, longer than forefemur; maxillary palpus 0.21 length of proboscis, dark; pedicel with few fine, short, hair-like setae on mesal side; antenna missing; clypeus bare; occiput with few erect forked scales; row of broad white scales around eye margins; vertex with all broad, flat, dark scales. *Thorax* (Figs. 1A, B): Scutum with narrow white (silvery) scales, from anterior promontory, reaching to level of wing root, on anterior two-thirds of scutum, with narrow dark scales on posterior one-thirds of scutum (some of these scales were rubbed off); no white scales present around prescutellar area; acrostichal and dorsocentral setae absent; scutellum with broad dark scales on all lobes; antepnotum with broad white scales; postpronotum with broad dark scales along upper margin of postpronotum (lectotype female has 3 broad dark scales on upper posterior corner and 1 broad dark scale on upper middle area of postpronotum, most of scales apparently rubbed off); paratergite without scales; postspiracular setae present; hypostigmal area and subspiracular area without scales; postprocoxal membrane without scales; patches of broad white scales on propleuron, lower prealar area, upper and lower portions of mesokatepisternum, and on mesepimeron; upper mesokatepisternal scale patch reaching to anterior corner of mesokatepisternum; upper mesepimeral scale patch connected with lower mesepimeral scale patch; lower mesepimeron without setae; metameron and mesopostnotum bare. *Wing*: With dark scales on all veins; cell  $R_2$  1.30–1.34 length of vein  $R_{2+3}$ . *Halter*: With dark scales. *Legs* (Fig. 1C): Coxae with patches of white scales; forefemur anteriorly dark without a narrow white longitudinal stripe on ventral surface in basal area; midfemur anteriorly dark without a large, median white spot; hindfemur anteriorly with a broad, white longitudinal stripe in basal 0.82; fore-, mid- and hindtibiae all dark; forelegs with tarsomeres 1–4 all dark, tarsomere 5 missing; midleg (right side) with tarsomeres 1–5 all

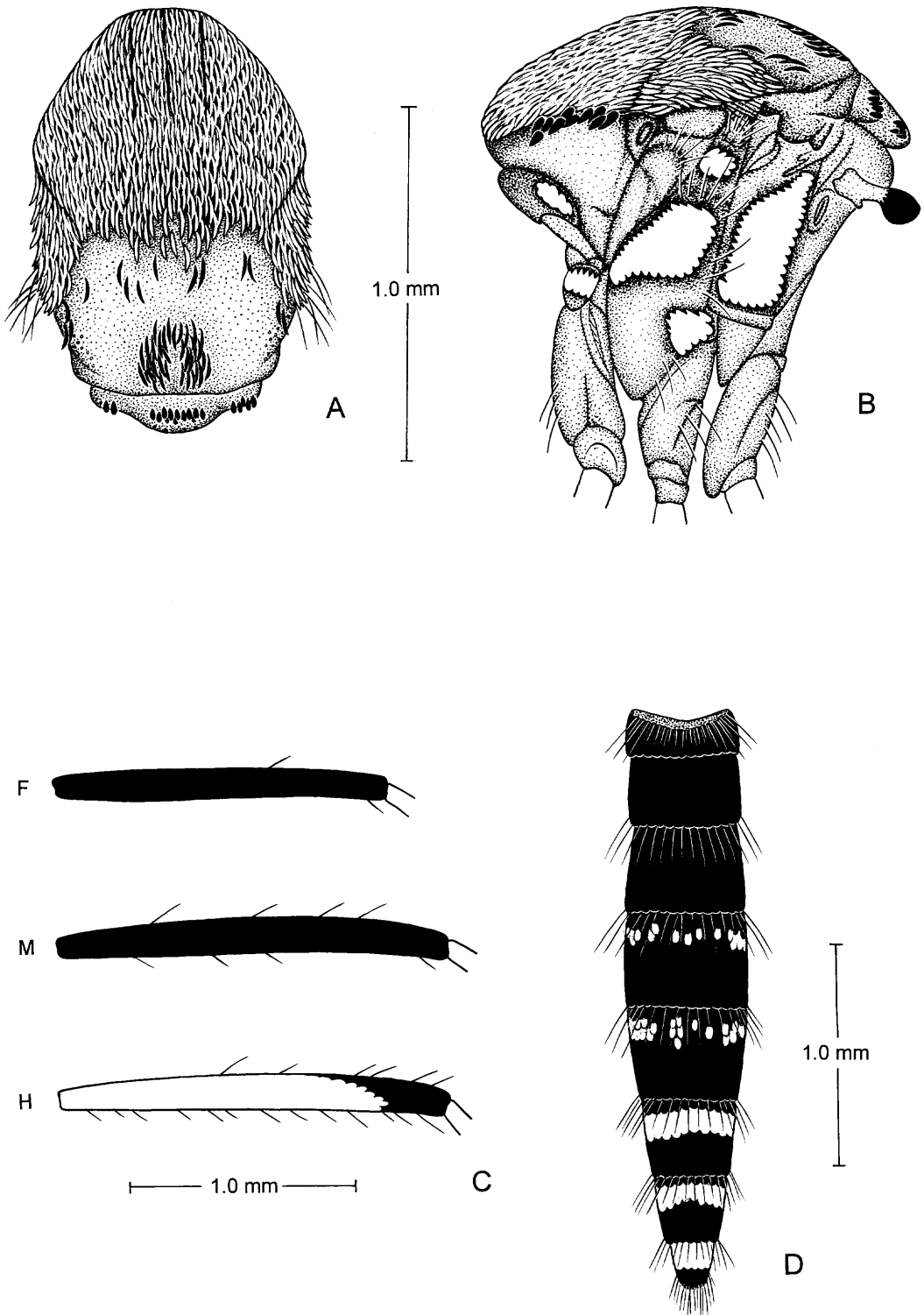


Fig. 1. *Aedes (Finlaya) niveus*, paralectotype female. A, Dorsal aspect of thorax. B, Lateral aspect of thorax. C, Anterior surface of legs (fore-, mid- and hindfemora). D, Dorsal aspect of abdomen.

dark, midleg (left side) with tarsomeres 2–5 missing; hindleg (right side) with tarsomeres 2–5 missing, hindleg (left side) missing; fore-, mid- and hindtarsal claws missing. *Abdomen* (Fig. 1D): Tergum I with white scales on laterotergite; terga II, III with basolateral white spots only; terga IV, V with incomplete subbasal white band and basolateral white spots; terga VI, VII with complete subbasal white band and basolateral white spots which connect with the subbasal white band; tergum VIII with broad basal white band; sternum VIII without scales and strongly compressed laterally.

Remarks.—*Aedes niveus* is presently known from the Philippines. Other records of so-called “*niveus*” will require confirmation. Rozeboom and Cabrera (1964: 18) reported that *Aedes (Finlaya) niveus* (Ludlow) is probably a vector of *Wucherria bancrofti* (Cobbold) filaria in the Philippines.

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#### LITERATURE CITED

- Belkin, J. N. 1962. The mosquitoes of the South Pacific (Diptera, Culicidae). University of California Press, Berkeley and Los Angeles. 2 vols., 608 and 412 pp.
- Barraud, P. J. 1934. The fauna of British India, including Ceylon and Burma. Diptera V, Family Culicidae. Tribes Megarhinini and Culicini. Taylor and Francis, London. 463 + xxviii pp., 8 pl., 1 map.
- Edwards, F. W. 1932. Diptera. Family Culicidae. In Wytzman, P. *Genera Insectorum*, Desmet-Vertheuil, Brussels, Fasc. 194, 258 pp., 5 pl.
- Harbach, R. E. and K. L. Knight. 1980. Taxonomists' glossary of mosquito anatomy. Plexus Publishing, Inc., Marlton, New Jersey. 415 pp.
- . 1982. Corrections and additions to taxonomists' glossary of mosquito anatomy. *Mosquito Systematics* (1981)13: 201–217.
- Knight, K. L. 1946. Entomology.—The *Aedes (Finlaya) niveus* subgroup of Oriental mosquitoes. (Communicated by Alan Stone.) *Journal of the Washington Academy of Sciences* 36: 270–280.
- Ludlow, C. S. 1903. Some Philippine mosquitoes. *Journal of the New York Entomological Society* 11: 137–144.
- Rozeboom, L. E. and B. D. Cabrera. 1964. Filariasis in Mountain Province, Luzon, Republic of the Philippines. *Journal of Medical Entomology*. 1: 18–28.
- Tewari, S. C. and J. Hiriyan. 1995. Description of *Aedes (Finlaya) niveus* (Diptera: Culicidae) from Andaman and Nicobar, India. *Mosquito Systematics* 27: 167–176.
- Theobald, F. V. 1903. A monograph of the Culicidae or mosquitoes, Vol. 3. The British Museum (Natural History), London. 359 pp. + 17 pl.