

**AEDES GOULDI, A NEW SPECIES OF THE SUBGENUS
AEDIMORPHUS THEOBALD FROM WEST PAKISTAN**
(DIPTERA: CULICIDAE)

JOHN F. REINERT

Reprinted from
PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF WASHINGTON
Vol. 74, No. 4, December 1972
pp. 357-362
Made in the United States of America

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE DEC 1972		2. REPORT TYPE		3. DATES COVERED 00-00-1972 to 00-00-1972	
4. TITLE AND SUBTITLE Aedes Gouldi, A New Species of the Subgenus Aedimorphus Theobald from West Pakistan				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Walter Reed Army Institute of Research, Department of Entomology, Washington, DC, 20012				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

**Aedes Gouldi, A New Species of the Subgenus Aedimorphus
Theobald from West Pakistan**

(DIPTERA: CULICIDAE)^{1,2}

JOHN F. REINERT,³ *Department of Entomology, Walter Reed Army Institute of
Research, Walter Reed Army Medical Center, Washington, D.C. 20012*

ABSTRACT—The female of *Aedes (Aedimorphus) gouldi*, n. sp. from West Pakistan is described and illustrated. The relationship of *gouldi* to closely related species is discussed.

The subgenus *Aedimorphus* Theobald of the genus *Aedes* Meigen is confined primarily to the African, Oriental and Pacific Islands Regions. During the course of work on a revision of the subgenus in Southeast Asia, material of the present new species was encountered in the U.S. National Museum collection. Although West Pakistan lies outside of the area included in the Southeast Asia revisionary study, the new species aids in an understanding of the subgenus within this area.

The nomenclature and chaetotaxy used for the adult follow Belkin (1962) and the terminology of the female genitalia follows Coher (1948).

***Aedes (Aedimorphus) gouldi*, n. sp.**

(Figs. 1, 2)

FEMALE (fig. 1). *Head*. Antenna dark brown, approximately 1.05 length of proboscis, torus brown with several small dark brown scales and a patch of short fine brown hairs mesally, flagellomere 1 with basal 0.45 pale and with a few small dark brown scales; clypeus dark brown, bare; maxillary palpus brown scaled with golden scales intermixed, approximately 0.21 length of proboscis; proboscis golden scaled with apical 0.25 darker, approximately 1.06 length of femur I; vertex with dorsum covered with narrow curved decumbent scales, an anteromedian golden group with a pale brown patch on each side and the re-

¹ This work was supported in part by Research Contract No. DA-49-193-MD-2672 from the U. S. Army Medical Research and Development Command, Office of the Surgeon General, and carried out at the Southeast Asia Mosquito Project, Smithsonian Institution, Washington, D.C.

² Immediate publication secured by full payment of page charges—Editor.

³ Major, Medical Service Corps, U. S. Army.

Fig. 1

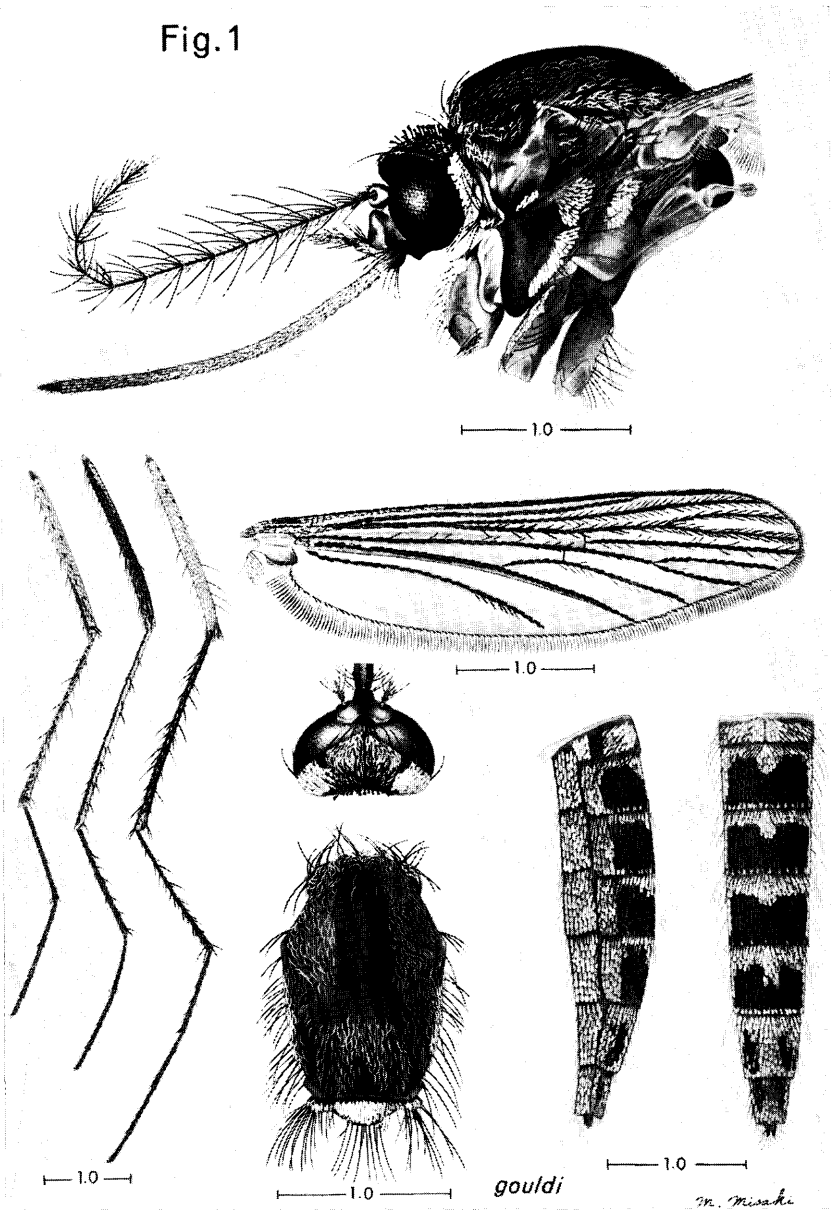


Fig. 1. *Aedes gouldi*, n. sp.: adult female morphology.

mainder white; orbital line with narrow white scales and pale brown bristles; lateral surface covered with broad golden-white scales and a small anterodorsal dark brown patch; numerous brown and golden erect forked scales on occiput and vertex extending to orbital line. *Thorax*. Scutal integument dark reddish-brown; type specimens with scutum partially rubbed dorsally between anterior dorsocentral bristles but remainder covered with narrow curved bronzy scales with narrow curved golden-white scale patches on median anterior promontory area, dorsocentral areas at anterior margin of scutum, large patch on supra-alar area above anterior margin of paratergite extending to posterior of wing base and a patch covering prescutellar space and among posterior dorsocentral bristles; scutellum with a patch of broad and a few narrow curved white scales on each lobe; anterior promontory, acrostichal, dorsocentral (anterior and posterior), humeral, fossal (anterior and posterior), supra-alar, prescutellar and scutellar (lateral and median) bristles golden-brown to reddish-black and well developed; pleural integument brown; anterior pronotal lobe with narrow curved golden scales, several golden bristles; posterior pronotum with narrow curved scales, bronzy ones dorsally and remainder golden, 4-5 dark brown posterior bristles; propleuron with a patch of broad golden scales, several golden-brown bristles; postspiracular area with a patch of narrow curved golden scales, 10-12 golden bristles; subspiracular area with a patch of narrow curved golden scales; sternopleuron with a patch of broad golden scales on upper area and extending ventrally over posterior area, several upper and posterior golden-brown bristles, lower ones shorter and golden; prealar knob with 3-4 broad golden scales, numerous golden bristles; paratergite with narrow curved golden scales; mesepimeron with a patch of broad golden-white scales and several golden bristles on upper area; other pleural areas bare. *Legs*. Coxae I-III each with several golden bristles, I and II with anterior surface covered with broad scales which are golden-brown on I and golden on II, III with a small anteroventral and a posterior patch of broad golden scales; trochanters I-III each with broad golden scales; femora I and III golden-white scaled, I with brown scales intermixed anteriorly mainly on apical 0.50 and a posteroventral longitudinal brown stripe on apical 0.75, III with a few intermixed brown scales anteriorly mainly dorsally and numerous pale brown scales intermixed on posterior 0.40, II with anterior and dorsal surfaces brown with a few golden-white scales intermixed and a golden-white patch on dorsobasal 0.30, posterior surface golden-white with a few pale brown scales intermixed becoming more numerous on apical 0.30, I-III each with an apical white spot; tibia I with anterior surface golden-white scaled with a number of brown scales intermixed, II golden-white scaled with a ventral longitudinal brown stripe from base to apex, stripe extends partially onto anteroventral and posteroventral surfaces, III golden-white scaled with dorsal surface brown scaled and numerous pale brown scales intermixed on anterior surface; tarsi I-III brown, I with tarsomeres 1-4 each with a posterior longitudinal golden-white stripe, II with tarsomeres 1-3 each with a posterior longitudinal golden-white stripe, I also with dorsobasal 0.50 golden-white, III with tarsomere 1 and basal 0.50 of 2 with a posterior longitudinal golden-white stripe; tarsal claws I-III each with 2 ungues, I, II with ungues equal each with a tooth, III with ungues equal and simple. *Wing*. Dorsal veins covered with moderately broad brown scales; costa with a few golden-white scales at base and along its posterior margin from just before humeral cross vein to apical 0.60; remigium with golden-white scales along posterior margin; radius and cubitus each

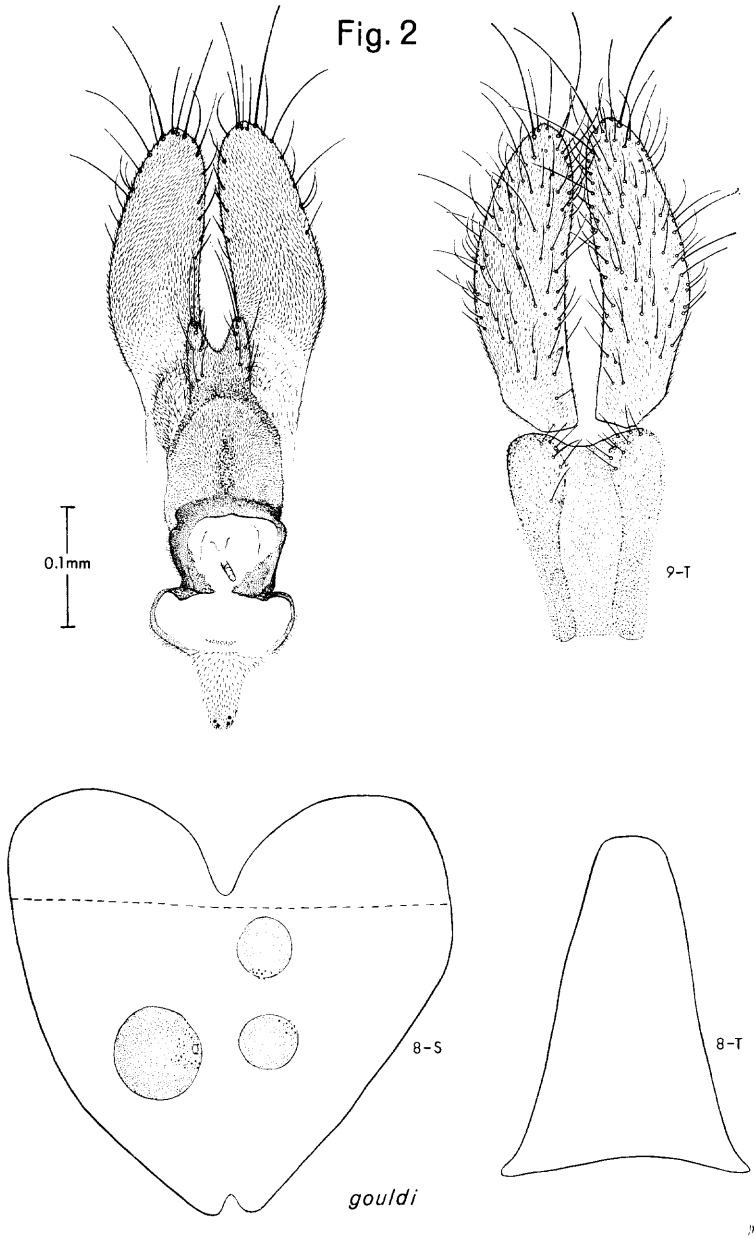


Fig. 2. *Aedes gouldi*, n. sp.: female genitalia.

with a few golden-white scales near base; ventral veins brown scaled with golden-white scales along basal 0.30 of costa and basal 0.25 of subcosta; alula with narrow pale brown scales along fringe; 1-2 remigial bristles. *Halter*. Stem pale, knob golden-white scaled. *Abdomen*. Tergum I golden-white scaled, lateral tergite with a rectangular patch of golden-white scales; terga II-VI each with a broad longitudinal golden-white stripe on lateral surfaces and a basal golden-white band connected with lateral pale stripe, bands broader mesally on II, III and forming an incomplete dorsomedian stripe on IV, V and a complete dorsomedian stripe on VI; II-V with a few golden-white scales along apical margin and VI with a golden-white apical band; VII covered with golden-white scales with 2 indistinct basal triangular-shaped pale brown spots; sterna covered with golden-white scales; terga and sterna with numerous golden bristles, mostly along posterior and lateral margins. *Genitalia* (fig. 2). Segment VIII almost completely retracted into segment VII; tergum VIII broadly rounded apically; sternum VIII with a deep median apical indentation; tergite IX bilobed with 6-8 bristles on each lobe, entire surface covered with minute setae; cerci long, 0.75-0.90 extended and visible dorsally, tergal surface covered with short bristles, apical ones longer, entire tergal and sternal surfaces covered with minute setae; postgenital plate with a deep median apical indentation with 7-9 bristles on each lobe, entire surface covered with minute setae; posterior cowl membranous and covered with tiny setae; anterior cowl, anterior and posterior sigma each moderately pigmented, narrow and covered with minute setae; atrial plate well developed, pigmented; insula tongue-like, membranous, covered with minute setae and with 3-4 tiny tuberculi on anterior 0.25; 3 pigmented, spherical spermathecae, 1 large and 2 slightly smaller ones.

MALE, PUPA AND LARVA. Not known.

TYPE DATA. *Aedes (Aedimorphus) gouldi*, holotype female, WEST PAKISTAN, Lahore, Shah Zada, IX-19-1962, D. J. Gould collector; 3 paratype females with same data as holotype; 2 paratype females with same data as holotype except date, VIII-30-1962; and 2 paratype females with same data as holotype except town and date which are Kahna Kacha, VIII-28-1962. Holotype and 6 paratypes deposited in United States National Museum (Natural History), Washington, D.C., and 1 paratype deposited in the British Museum (Natural History), London, England.

DISTRIBUTION. Known only from Shah Zada and Kahna Kacha, Lahore district, West Pakistan.

BIOLOGY. All specimens were taken while biting cattle.

TAXONOMIC DISCUSSION. *Aedes gouldi* resembles in habitus *pallidostratus* (Theobald), *mediolineatus* (Theobald) and *pampangensis* (Ludlow). The following features of *gouldi* distinguish it from closely related species: scutellum with broad and a few narrow white scales on each lobe; no apparent pale scaled stripes on scutum; posterior pronotum with 4-5 bristles; postspiracular area with 10-12 bristles; propleuron with broad golden scales; and wing with anterior margin of costa brown scaled. *Aedes pallidostratus* possesses: scutellum with narrow curved whitish-golden scales on each lobe; scutum with

2 distinct and 1 indistinct longitudinal pale scaled stripes; posterior pronotum with 9-10 bristles; postspiracular area with 7-8 bristles; propleuron with narrow curved golden scales; and wing with anterior margin of costa golden scaled. *Aedes mediolineatus* possesses: scutellum with narrow curved golden scales on each lobe; scutum with 3 distinct longitudinal pale scaled stripes; posterior pronotum with 6-8 bristles; postspiracular area with 7-10 bristles; propleuron with narrow golden-white scales; and wing with anterior margin of costa brown scaled. *Aedes pampangensis* possesses: scutellum with overlapping broad silvery scales on each lobe; scutum without pale scaled stripes; posterior pronotum with 6-7 bristles; postspiracular area with 6-7 bristles; propleuron with broad white scales; and wing with anterior margin of costa brown scaled. *Aedes gouldi* is also similar in habitus to *trimaculatus* (Theobald) and *nigrostriatus* (Barraud) but can be easily separated from these 2 species by the dark reddish-brown scutal integument while the latter species has a pale integument with dark stripes and *trimaculatus* has a dark reddish-brown integument with pale spots. *Aedes trimaculatus* also has the scutellum with narrow curved reddish-brown scales on median lobe and narrow curved golden scales on the lateral lobes while *nigrostriatus* has the scutellum with narrow curved golden scales on each lobe and a few narrow curved reddish-brown scales on laterobasal areas of median lobe.

This species is named for Dr. D. J. Gould, SEATO Medical Research Laboratory, Bangkok, Thailand, in recognition of his valuable support in providing many mosquito specimens to the Southeast Asia Mosquito Project.

ACKNOWLEDGMENTS

My sincere appreciation is expressed to Dr. Botha de Meillon, Responsible Investigator, Southeast Asia Mosquito Project, and LTC Bruce F. Eldridge, Chief of the Department of Entomology, Walter Reed Army Institute of Research, for critically reviewing the manuscript. Special thanks are given M. Misaki and M. Hasunuma of the Department of Entomology, U. S. Army 406th Medical Laboratory, Japan, for preparing the illustrations. I am especially grateful to my wife, Mollie, for typing the manuscript.

REFERENCES

- BELKIN, J. N. 1962. The mosquitoes of the South Pacific. Univ. Calif. Press, Berkeley. 608 and 412 pp.
- COHER, E. I. 1948 (1949). A study of the female genitalia of Culicidae: With particular reference to characters of generic value. Ent. Amer. 28(3): 75-112.