Revalidation of *Culex (Melanoconion) invocator* Pazos with a Redescription of Adults and Illustration of Male Genitalia (Diptera: Culicidae)[1]

Sunthorn Sirivanakarn[2]

ABSTRACT. *Culex (Melanoconion) invocator* Pazos, originally described from Cuba, is resurrected from the synonymy of *Cx. (Mel.) erraticus* (Dyar and Knab). The adult male (including the genitalia) and presumptive female of this species are described. The characteristic male genitalia of *invocator* and *erraticus* are illustrated for comparison.

Culex invocator was described by Pazos (1908:426) from adults collected at San Antonio de los Banos, Cuba. The specimens were sent to Dyar and Knab for determination at the U.S. National Museum (USNM). Based on the conclusion of the latter 2 authors that it was a new species of *Culex*, the original description of *invocator* was inadvertently credited to Dyar and Knab. Subsequently, Dyar and Knab (1909:258) redescribed the species as new under their coauthorship with notes on the specimens examined and designation of a male and a female as type (both specimens bear USNM no. 12110). In "The mosquitoes of North and Central America and the West Indies" of Howard, Dyar and Knab (1915:323), the authorship of *invocator* was properly corrected to Pazos. Included in that treatment are the original Spanish description by Pazos with an English translation, a redescription of the adults and an illustration of the male genitalia. Since then, the name *invocator* was the subject of several taxonomic changes. It was first synonymized with *Culex (Mochlostyrax) inhibitator* Dyar and Knab, 1906 from the Dominican Republic by Dyar (1928:317). Nine years later, King and Bradley (1937:345) transfered the name and synonymized it with *Cx. erraticus* (Dyar and Knab, 1906) which was described from the United States. The latter synonymy was apparently based only on the published descriptions and has been accepted until the present. In 1957, a lectotype male was selected by Stone and Knight (1957:52) for this nominal species. The latest information on the type of *invocator* was mentioned in Belkin, Schick and Heinemann (1965:15).

In a recent preliminary study of the *Melanoconion* types and topotypic specimens of several species at the USNM, I have examined the male lectotype of *invocator* and found that it differs rather strikingly from *inhibitator* and *erraticus* (including most of other nominal forms currently regarded as its synonyms)

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[2]Medical Entomology Project, Smithsonian Institution, Washington, D.C. 20560.

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in several significant features of the male genitalia. On this basis, *invocator* is considered as valid and is resurrected from synonymy with *erraticus*.

For a redescription of *invocator*, I have also examined additional specimens in the syntype series as noted by Stone and Knight (1957:52). This material contains 21 specimens (5 males and 16 females), found among *erraticus* specimens in the general collection of the USNM. Most of these specimens bear just number labels and only a few were found to have the following printed labels: Cuba//J.H. Pazos collr.//. Of the 5 males, 3 were found to agree perfectly with the *invocator* lectotype in the genitalia while the other 2 were found to be *erraticus*. The remaining 16 females are probably a mixture of *invocator* and *erraticus*. However, as they are extremely similar and cannot be determined with certainty, I have tentatively identified all these females as *invocator*. The description of the general adult characters given below is based on this identified material and the illustration of the male genitalia is made from one of the 2 slides prepared from the 2 syntype males as determined from a close comparison with the slide of the lectotype. To clarify the identity of *invocator*, the male genitalia of *erraticus* from the southern United States are also illustrated. To be consistent with publications of New World *Culex* by Belkin and associates, the taxonomic references, format of description and terminology of Berlin (1969), Belkin, Heinemann and Page (1970) and Valencia (1973) are employed.

Culex (Melanoconion) invocator Pazos
(Fig. 1)

Culex invocator Pazos 1908:426: TYPE: Lectotype male (284) with genitalia slide (No. 337), San Antonio de los Banos (La Habana), Cuba, J.H. Pazos (USNM no. 12110, selection of Stone and Knight 1957:52).
Culex invocator of Howard, Dyar and Knab (1915:323).
Culex (Choeroporpa) invocator of Dyar (1920:64).
Culex (Mochlostyrax) inhibitator (in part) of Dyar (1928:317).
Culex (Melanoconion) inhibitator (in part) of Edwards (1932:216).
Culex erraticus (in part) of King and Bradley (1937:345).
Culex (Melanoconion) erraticus (in part) of Stone, Knight and Starcke, (1959: 270; Belkin, Schick and Heinemann (1965:15); Knight and Stone (1977:257).

FEMALE. Wing 3.0 mm. Proboscis 1.8 mm. Forefemur 1.6 mm. Abdomen 2.0 mm. Exceedingly similar to the North American and Jamaican populations of *erraticus* as described by Carpenter and LaCasse (1955:305) and Belkin, Heinemann and Page (1970:84). Head: Vertex largely covered with broad, dark appressed scales; narrow decumbent scales golden brown, all restricted to dorsal midline in center and to occiput; lateral patch of broad scales predominantly dark except for a few pale ones on eye margin; erect scales numerous and entirely blackish. Palpus and proboscis entirely dark scaled; length of palpus about 0.2 of proboscis. Thorax: Integument of pronotum, mesonotum and pleuron dark brown to nearly black; mesonotal scales narrow, dense, dark brown or shiny brown; apn with 5-7 dark bristles and about 10 weaker setae laterad, scales absent; ppn with a broad patch of narrow dark scales on upper surface and 4 posterior bris-

tles; pleuron uniformly brownish with distinct whitish scale patches on upper corner and posterior lower border of stp and middle part of mep; ppl with 2,3 bristles and a few other weak setae; stp with irregular row of 6,7 bristles on its upper corner and a vertical row of 6,7 bristles on lower posterior border; lower mep with 1 strong, dark bristle; upper mep with a patch of about 10 yellowish setae dorsad of scale patch. Legs: Anterior surface of hindfemur with a narrow whitish stripe on lower anterior surface; anterior and dorsal surfaces of fore- and midfemora entirely dark, ventral surface whitish; all tibiae and tarsi entirely dark. Wing: Scales on all veins rather narrow, dense and entirely dark; scales on veins R_2, R_3 and R_{4+5} rather long, narrow, clavate. Abdomen: All tergites entirely dark on dorsal surface; tergites II-VII with basolateral pale spots not readily visible from above; sternites largely dark with some pale scales forming indistinct basal bands.

MALE. Essentially as described for female. Head: Palpus long, exceeding proboscis by a little more than the length of segment 5; apical 0.1 of segment 3 with a lateral tuft of 6,7 setae; segments 4 and 5 weakly plumose. Antennal flagellum strongly plumose.

MALE GENITALIA (Fig. 1). Segment IX: Lobe of tergite IX large, oval in outline, bearing numerous strong setae. Sidepiece: Stout, broad oval, about 0.3 mm in length; outer tergal surface strongly swollen in middle; a few to several scales present on basal lateral portion; inner tergal surface lightly convex with numerous strong and weak setae forming a broad patch from near base to level of subapical lobe. Subapical Lobe: Sternomesal in position proximal and distal divisions large, elongate, stemlike; proximal division distally forked into 2 elongate columnar processes, each bearing on its apex a flattened, apically hooked, rodlike seta (*a*, *b*); distal division with 1 long, hairlike seta (*h*) at base, its apical portion more or less divided into 2 distinct lobes, the more proximal of which bears 1 large, flattened, strongly hooked seta and 1 short, acute seta; more distal lobe with a densely packed group of 1 broad, oval leaflet and 4 flattened, subequal bladelike setae. Clasper: Short, more or less straight, about 0.5 length of sidepiece; basal and preapical portions broad, median portion narrow and not curved as in most forms; snout recurved and apically pointed, outer preapical portion with a distinct crest of spinelike spicules; seta *a* (spiniform) short, flattened and apically blunt; seta *b* strong, spinelike; seta *c* minute, hairlike, proximad of *b*. Phallosome: Aedeagus strongly sclerotized, relatively simple with usual basal hook as in most *Melanoconion;* lateral view of individual lateral plate of aedeagus as figured; apical portion with 2 short, pointed processes tergad and a short, apically hooked process sternad; basal hook without spicules or spines. Proctiger: Crown dark, with a comblike row of 10-12 flattened and blunt spicules; paraproct narrow; cercal sclerite largely membranous, cercal setae 2; basolateral sclerite large, somewhat triangular.

PUPA and LARVA. Unknown.

SYSTEMATICS. Based on the overall similarity in the general adult characters and the male genitalia, *Cx. invocator* is evidently closely related to *erra-*

ticus with which it falls into a distinct group or complex in the subgenus *Melanoconion*. The females of both species are exceedingly similar in practically all features, including the presence of a broad whitish scale patch in the middle of the mesepimeron, which has been used in the diagnosis of *erraticus* (Belkin, Heinemann and Page 1970:51-2; Knight and Haeger 1971:551-5). A detailed comparison of the male genitalia of the 2 species shows that they are strikingly different from one another in the shape and size of the sidepiece, clasper and lateral plate of the aedeagus, and in the development of the setae of the subapical lobe (Figs. 1, 2). In addition, the male of *invocator* also differs slightly from that of *erraticus* in the reduction of number and length of setae on palpal segments 4 and 5.

DISTRIBUTION. Known only from Cuba. Material examined: 4 males (Nos. 284 (lectotype), 309, 341, 608), 16 females (Nos. 278, 290, 291, 293, 294, 302, 310, 312 (mounted on slide), 330, 347, 362, 601, 610, 612, 670, 699).

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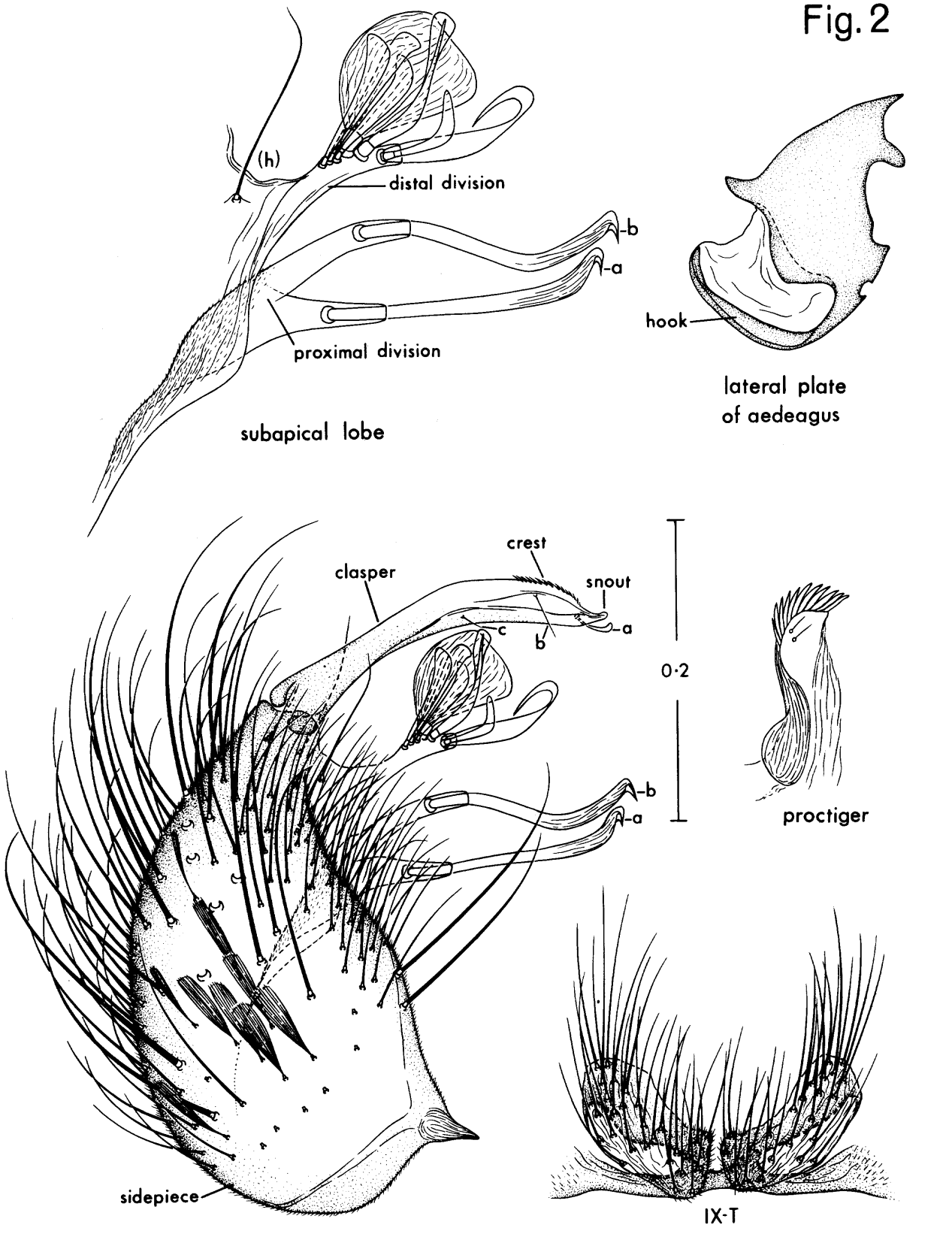
Fig. 2

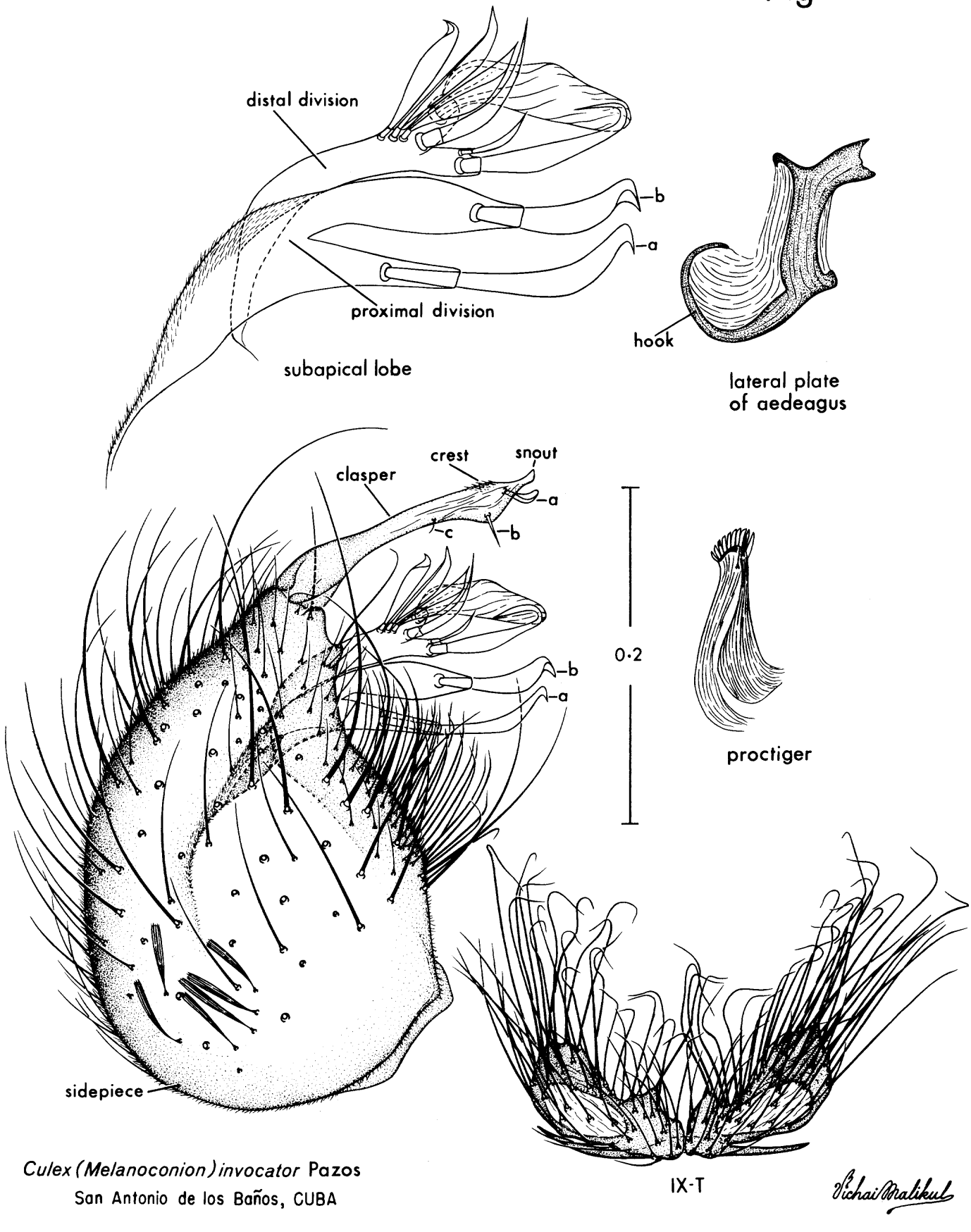


Vichai Malikul

Culex (Melanoconion) erraticus (Dyar & Knab)

U.S.A.

Fig. 1



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San Antonio de los Baños, CUBA

Pichai Ratikul