

IDENTIFICATION OF DAMAGED ADULT FEMALE SPECIMENS OF *Aedes albopictus* AND *Aedes aegypti* IN THE NEW WORLD

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ABSTRACT. Two introduced species of *Aedes* (*Stegomyia*), *Aedes albopictus* and *Aedes aegypti*, occur in the New World. Three characters, easily and simultaneously observed from an anteroventral view, allow for rapid and reliable specific identification of most specimens that lack the characteristic scutal scale patterns. These 3 characters are the presence or absence of pale scales on the clypeus; the presence or absence of a narrow, median line of pale scales on the anterior face of the midfemora; and the pattern of pale and dark scales on abdominal sterna III-V.

Two species of *Aedes* (*Stegomyia*) Theobald, *Aedes* (*Stg.*) *albopictus* (Skuse) and *Aedes* (*Stg.*) *aegypti* (Linnaeus), occur in the New World. Both species are native to the Old World and have been introduced into North and South America by the agency of man. In the New World, these 2 species may occur together in the southern USA, in urban areas of the eastern USA, in northern Mexico, in portions of Brazil, and in the Dominican Republic.

Adults of both species are black to blackish-brown and have distinctive scutal markings that usually allow undamaged specimens of these species to be readily distinguished from native species of New World *Aedes*. However, even when the scutal scale patterns have been partially or completely removed, these 2 species can be differentiated from native New World *Aedes* species by the following combination of characters: pedicels and apices of palpi with silvery white scales (Fig. 1); scutellum with broad, flat, silvery white scales on all lobes; subspiracular area and paratergite with broad white scales; postspiracular area without scales; hindfemora with pale scales forming complete ring at base; hindtarsomeres 1-4 with broad basal white bands, and hindtarsomeres 5 entirely white or, on occasion, white with narrow, dark, apical margins; and proboscis and wings entirely dark scaled.

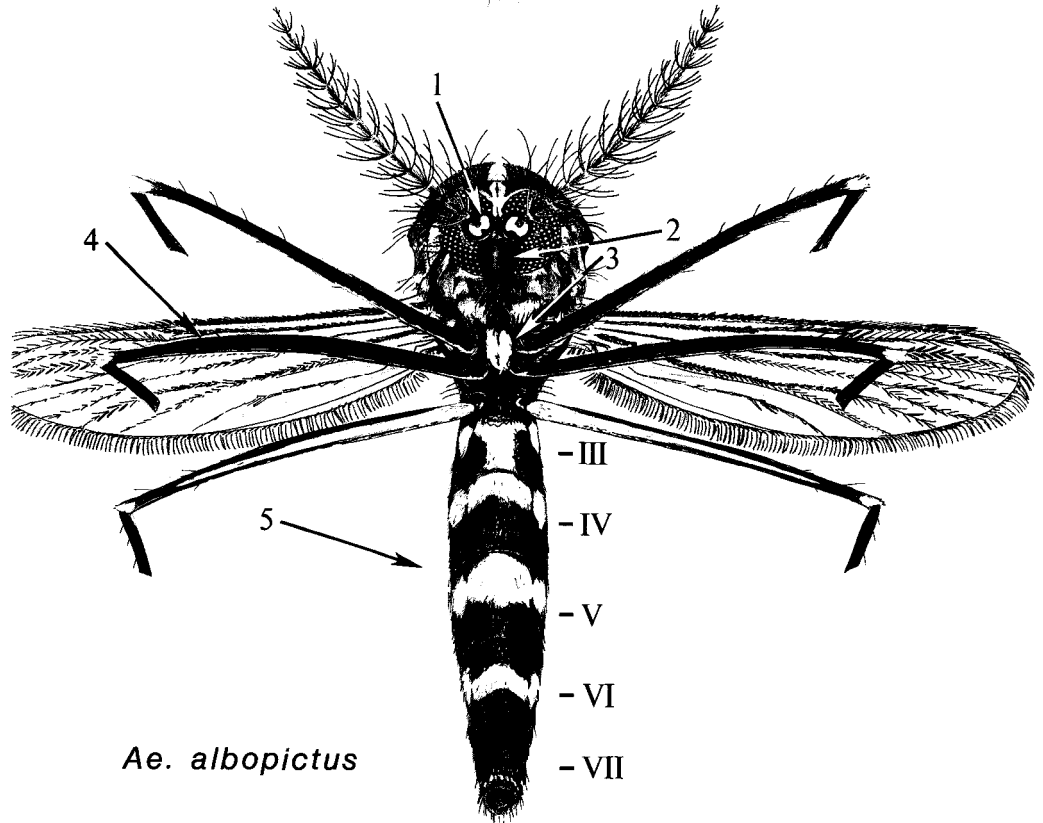
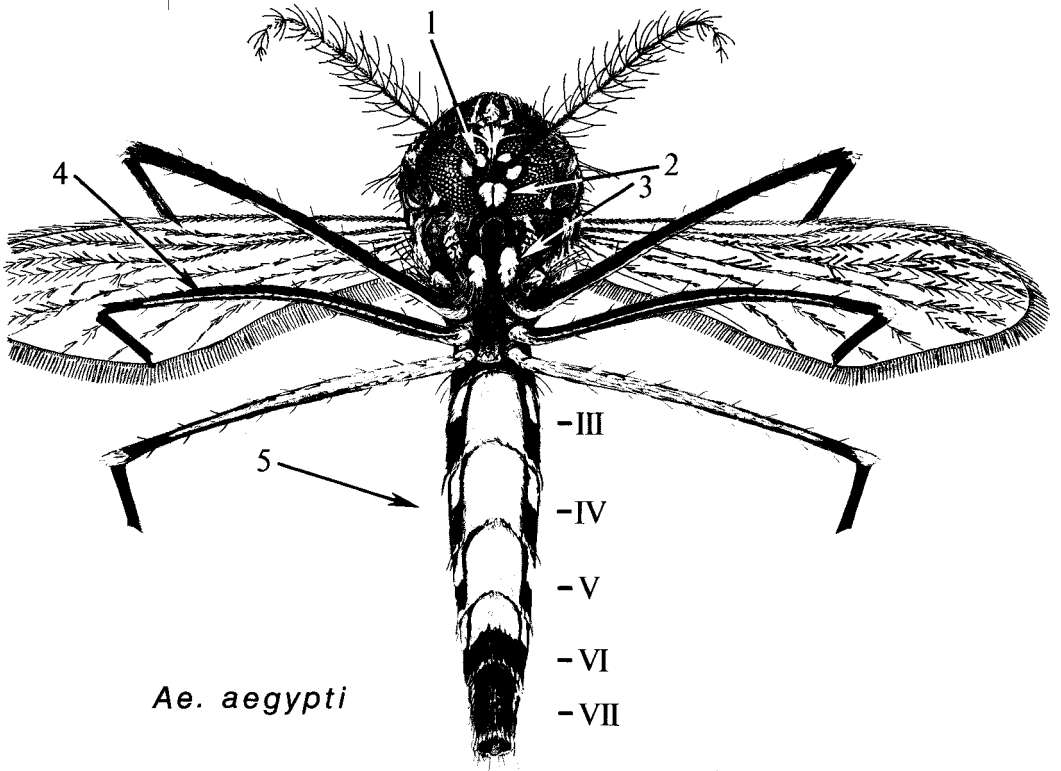
Darsie (1986, 1992) provided information, based on the works of Huang (1968, 1979) and Tanaka et al. (1979), concerning the identification of *Ae. albopictus* in the Nearctic Region. Unfortunately, keys in the above works rely

heavily upon the characteristic scale patterns on the scutum to identify adult specimens. When specimens are collected with CDC light traps, sweep nets, or by suction devices, as is commonly done in routine mosquito surveillance, the scutum on many specimens is largely descaled, and the characteristic median line or lyre-shaped marking is absent.

During the processing of mosquitoes from Florida (Mitchell et al. 1992) and Arkansas (Savage et al. 1993) for virus isolation, it was necessary to rapidly identify large numbers (500-2,000 per day) of *Ae. (Stegomyia)* that lacked scutal scales. Three distinctive characters, one each on the clypeus, midfemora, and abdominal sterna, can be easily and simultaneously observed from an anteroventral view (Fig. 1), and allow for rapid and reliable specific identification. Even with severely damaged specimens, at least 2 of these 3 diagnostic characters usually remain intact.

Aedes aegypti has silvery white scales on the clypeus that appear to form 2 submedian patches or, if joined, one large patch (Bonne-Wepster and Brug 1932), whereas the clypeus of *Ae. albopictus* is unscaled and entirely black. When the head is viewed from an anterior or anteroventral position at low to moderate magnification, the one or 2 pale scale patches on the clypeus in *Ae. aegypti*, plus one on each pedicel and one on the apex of each palpus, give the appearance of 5 or 6 prominent silvery white scale patches on the head (Fig. 1). In contrast, the unscaled clypeus in *Ae. albopictus* results in the appearance of only

Fig. 1. Anteroventral view of *Aedes aegypti* (top) and *Aedes albopictus* (bottom) showing diagnostic characters. The proboscis was cut near the base of the hindfemora and removed. Five numbered arrows for each species point to the following structures arranged from anterior to posterior: 1) pale scales on pedicel; 2) clypeus, with or without pale scales; 3) pale scales on apex of palpus; 4) anterior surface of midfemur, with or without median, narrow line of pale scales; and 5) scaling pattern on abdominal sterna III-V.



4 prominent pale spots on the head: a pair of pale scale patches on the pedicels and a pair of pale spots on the palpi with the spots in each pair being separated by a dark median area (Fig. 1). The anterior surface of the midfemur in *Ae. aegypti* is characterized by the presence of a narrow, ventromedian stripe of white scales (Mattingly 1952), whereas the corresponding area in *Ae. albopictus* is entirely dark scaled (Fig. 1). Abdominal sterna III-V are covered with pale scales in *Ae. aegypti* (Tanaka et al. 1979, Darsie 1986), whereas in *Ae. albopictus*, pale scales on sterna III-V are restricted to basal or basal and median areas, and apical or apicolateral portions of these sterna are covered with dark scales (Fig. 1). All 3 of these characters are readily apparent when specimens are viewed from an anteroventral view at low to moderate magnifications (7-30 \times) typical of dissecting microscopes.

Two additional characters that may be useful for verifying the identification of these 2 species are the scale pattern on the mesepimeron, and presence or absence of denticles on fore- and midungues. In *Ae. aegypti*, scales on the mesepimeron form 2 patches separated by an unscaled area, whereas in *Ae. albopictus* the scales are more numerous and form one large patch with a 90° angle so as to resemble a tipped L (see figures in Tanaka et al. 1979). The fore- and midungues are simple in *Ae. albopictus*, but unidentate in *Ae. aegypti*.

We thank M. F. Magada, Division of Vector-Borne Infectious Diseases, and Department of Art, Colorado State University, Fort Collins, for preparing Fig. 1.

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