

## BROMELICOLOUS ANOPHELES

(Diptera, Culicidæ)

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In the American tropics the water held by the leaf-bases of Bromeliaceæ has been found to be the natural habitat of the larvæ of three species of Anopheles. These species are closely related and of characteristic appearance, thus forming a small natural group within the genus. A fourth species, hitherto undescribed and differing only in a few details, is at hand. While the larval habits of this fourth species have not been definitely established, its close resemblance to the others, and the fact that it occurs in forested regions, warrant the conclusion that its larvæ occur in water-bearing bromeliads.

The species under consideration may be separated as follows:

1. Wing with four white spots involving costa and first vein..... 2  
Only the two outer spots involving the costa.....*neivai* H. D. & K.
2. Third vein broadly white in the middle..... 3  
Third vein black, a minute white spot at base.....*hylephilus* n. sp.
3. Hind tarsi with the last four joints white and with black rings at their bases .....*boliviensis* Theob.  
Hind tarsi with the first four joints black, apically ringed with white, the fifth wholly black.....*bellator* D. & K.

**Anopheles hylephilus**, new species.

*Female*.—Proboscis slender, uniform, black-scaled. Palpi as long as the proboscis, uniform, black-scaled, the scales roughened toward base, a minute spot at base of last joint and the tip white. Occiput blackish gray, densely clothed with erect, broadly ovate black scales, some narrower whitish ones in front, a tuft of white hair-scales projecting between the eyes.

Mesonotum elongate, pale gray pruinose, medianly with two narrow, straight, impressed black stripes, obsolete on posterior third; close to lateral margins a pair of broader black stripes, attenuated at both ends, narrowly interrupted beyond the middle by an oblique gray line; disk with scattered pale hairs, anterior and lateral margins with a border of fine whitish scales. Scutellum narrow, collar-like, gray-brown, with dark marginal

bristles. Postnotum nude, brown. Pleuræ blackish brown, with a transverse stripe and the lower portion whitish pruinose; coxæ pale.

Abdomen depressed, dull black, without scales, clothed with rather coarse black hairs, posteriorly denser at the sides and with pale luster.

Wings hyaline, the veins marked black and white, the outstanding scales very narrow; four large white costal spots involving costa and first vein, the second spot at about middle of wing, the fourth a short distance before apex; a large white spot on the fringe at wing-apex at ends of second and third veins; a white spot on the fringe at apex of lower branch of fourth vein, another at apex of upper branch of fifth; a minute white spot at base of third vein, another at furcation of fifth; basal portion of first vein with a long interrupted white streak, separated from first costal spot by a small black spot. Halteres with white stems and black knobs.

Legs long and slender, black marked with white. Femora streaked with white, the hind pair with a black ring close to base; tibiæ white beneath to near apices, the extreme apices white; front tarsi with the first three joints dorsally streaked with white, the first with black ring near base, the second and third with black basal rings, the last two joints wholly dark; mid tarsi with the four proximal joints dorsally streaked with white to near base, the first with black ring toward base, the fifth wholly dark; hind tarsi with the first joint ventrally streaked with white, a black ring near base and a broad white one at apex, the four distal joints white and with basal black rings.

Length: Body about 3 mm., wing 3 mm.

Manoa, Orinoco River, Venezuela, January 10, 1910, one female (F. L. de Verteuil); Guayaquil, Ecuador, one female (F. Campos Ribadeneira); Gatun, Canal Zone, Panama, February, 1917, one female (L. H. Dunn).

Type, Cat. No. 21065, U. S. Nat. Mus.

Resembles *Anopheles boliviensis* most closely, but is readily distinguishable by the black-scaled third vein. In some specimens of *boliviensis* the third vein is dusky, but in such cases

the black spots at the ends of the vein are always differentiated. The mid tarsi of *boliviensis* have the three outer joints wholly dark and there are other less obvious differences in the leg-ornamentation.

**Anopheles boliviensis** (Theob).

*Anopheles lutzii* Theobald (not Cruz), Mon. Culic., vol. 1, p. 177 (1901).

*Laverania lutzii* Theobald, Journ. Trop. Med., vol. 5, p. 183 (1902).

*Kerteszia boliviensis* Theobald, Ann. Mus. Nat. Hung., vol. 3, p. 66 (1905).

*Anopheles boliviensis* Knab, Ins. Insc. Menstr., vol. 1, p. 17 (1913).

*Anopheles boliviensis* Knab, Rept. 1st Exped. to So. Amer., Harvard Sch. Trop. Med., p. 216 (1915).

This species ranges through the moist forest zone of South America, from the state of São Paulo northward, westward to the slopes of the Bolivian and Peruvian Andes. Further bibliographic references and a discussion of the synonymy will be found in volume 1, page 17, of this periodical.

**Anopheles neivai** Howard, Dyar & Knab.

*Anopheles neivai* Howard, Dyar & Knab, Mosq. No. & Centr. Amer. & W. Ind., vol. 4, p. 986 (1917).

Definitely known to occur in Panama and Costa Rica. Larvæ found inhabiting water held by bromeliads in southern Mexico (Córdoba) may be referred to this species without much doubt.

At this writing, the volume above referred to has not left the press, but the species is established by the figure of the wing published in a preceding volume (l. c., vol. 2, pl. 41, fig. 8, 1913).

**Anopheles bellator** D. & K.

*Anopheles bellator* Dyar & Knab, Proc. Biol. Soc. Wash., vol. 19, p. 160 (1906).

*Anopheles bellator* Howard, Dyar & Knab, Mosq. No. & Centr. Amer. & W. Ind., vol. 4, p. 985 (1917).

So far, this species is known only from the island of Trinidad, but undoubtedly will be found to occur on the adjacent mainland.