

***Leptotarsus (Longurio) byersi*, a new flightless crane fly from Ecuador (Diptera: Tipulidae)**

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Abstract. A new genus and species of flightless crane fly, *Leptotarsus (Longurio) byersi* Young and Gelhaus is described and illustrated for both sexes. This is the first record of a flightless species of *Leptotarsus* for South America, and one of the few Neotropical species of Tipulinae subapterous in both sexes. The closest relative to *Leptotarsus byersi* is *L. stenostyle* ALEXANDER, also from Ecuador but with fully winged males. *Leptotarsus byersi* shows modifications in both the thorax and coxae, in addition to the reduction of wings. All specimens were collected with pan traps.

Key words: *Leptotarsus*, *Longurio*, crane fly, apterous, Ecuador.

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INTRODUCTION

An undescribed species of flightless crane fly was collected in pan-traps set in a montane habitat on the western Andean cordillera of northern Ecuador. Although species with micropterous females and males with fully functional wings are not uncommon in Neotropical Tipulinae (species of *Tipula (Eumicrotipula)*), this new species represents one of the few tipuline species in South America with both sexes apterous. The new species is morphologically modified due to aptery, with a greatly reduced thorax and enlarged coxae.

Leptotarsus (Longurio) byersi YOUNG & GELHAUS, new species

Diagnosis: *Leptotarsus byersi* can be separated morphologically from the other species in this genus by the following combination of characters: subaptery in both sexes,

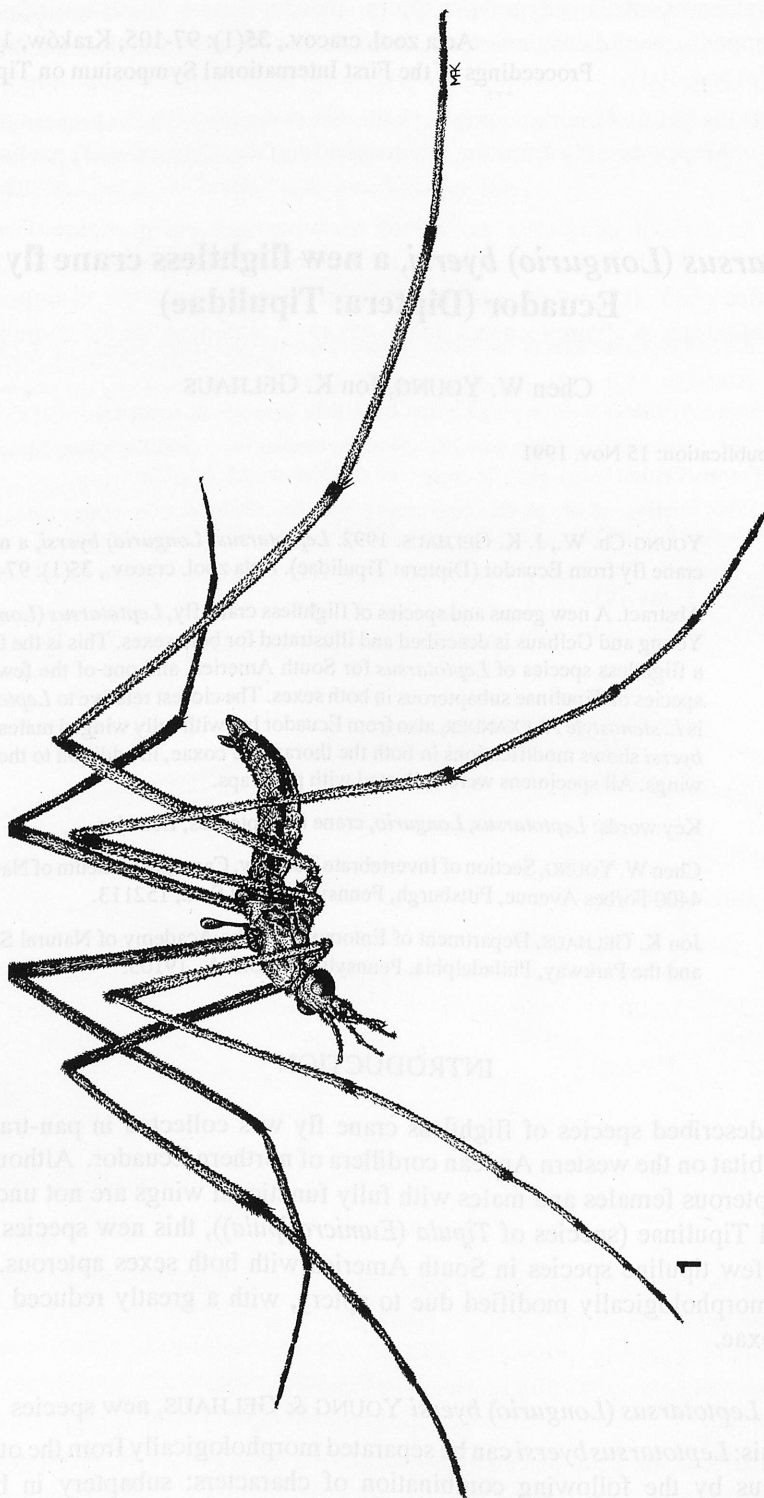


Fig 1. *Leptotarsus (Longurio) byersi*. Lateral habitus of adult male.

translucent membranous patch on pronotum, inner dististyle with dark spinules and finger-like appendage and female dorsal plate of hypovalve with three subapical setae.

Description. Body length: male, 9-11 mm; female, 10-13 mm. Micropterous in both sexes (Fig. 1).

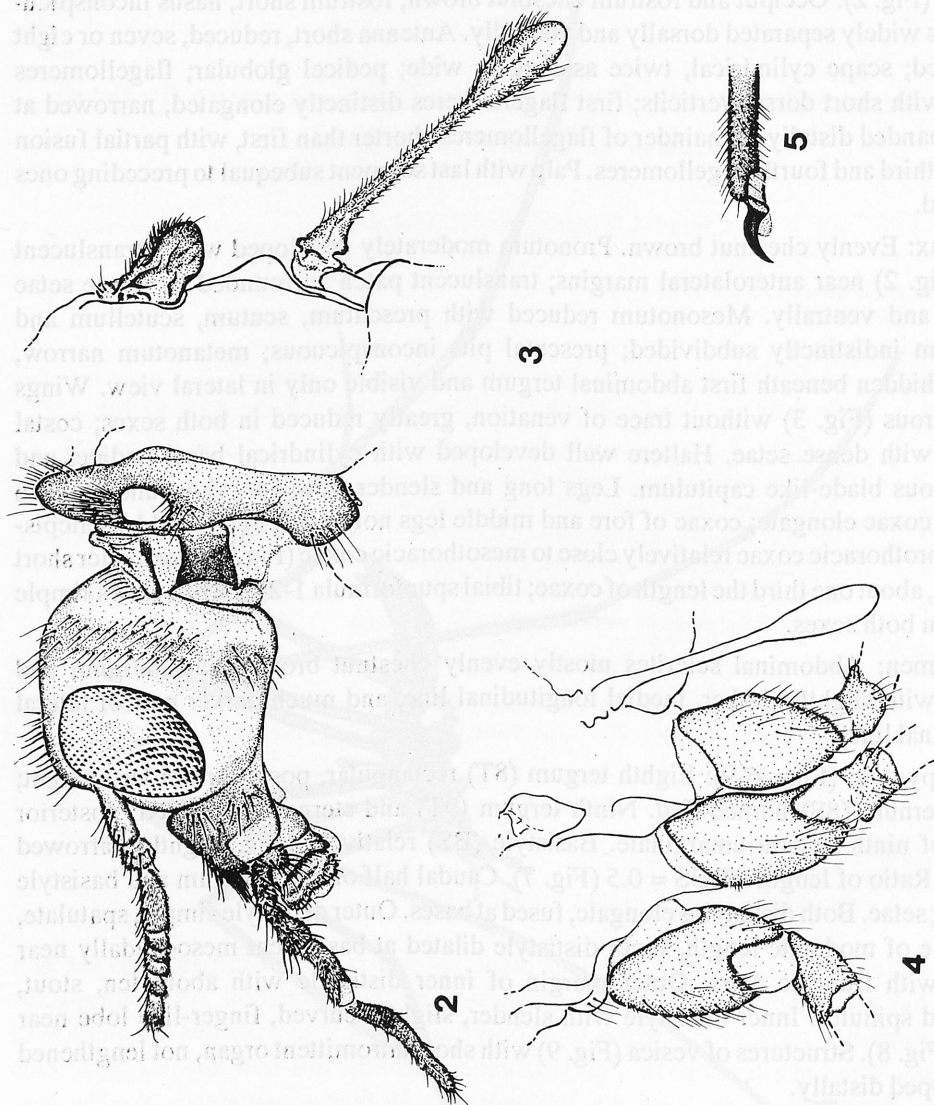
Head (Fig. 2): Occiput and rostrum chestnut brown; rostrum short; nasus inconspicuous. Eyes widely separated dorsally and ventrally. Antenna short, reduced, seven or eight segmented; scape cylindrical, twice as long as wide; pedicel globular; flagellomeres simple, with short dorsal verticils; first flagellomeres distinctly elongated, narrowed at base, expanded distally; remainder of flagellomeres shorter than first, with partial fusion between third and fourth flagellomeres. Palp with last segment subequal to preceding ones combined.

Thorax: Evenly chestnut brown. Pronotum moderately developed with a translucent patch (Fig. 2) near anterolateral margins; translucent patch surrounded by dense setae dorsally and ventrally. Mesonotum reduced with prescutum, scutum, scutellum and postnotum indistinctly subdivided; prescutal pits inconspicuous; metanotum narrow, dorsally hidden beneath first abdominal tergum and visible only in lateral view. Wings micropterous (Fig. 3) without trace of venation, greatly reduced in both sexes; costal margins with dense setae. Haltere well developed with cylindrical basal pedicel and conspicuous blade-like capitulum. Legs long and slender in males, short and stout in females; coxae elongate; coxae of fore and middle legs not widely separated by katepisternum; prothoracic coxae relatively close to mesothoracic coxae (Fig. 4); trochanter short and stout, about one third the length of coxae; tibial spur formula 1-2-2; tarsal claws simple (Fig. 5) in both sexes.

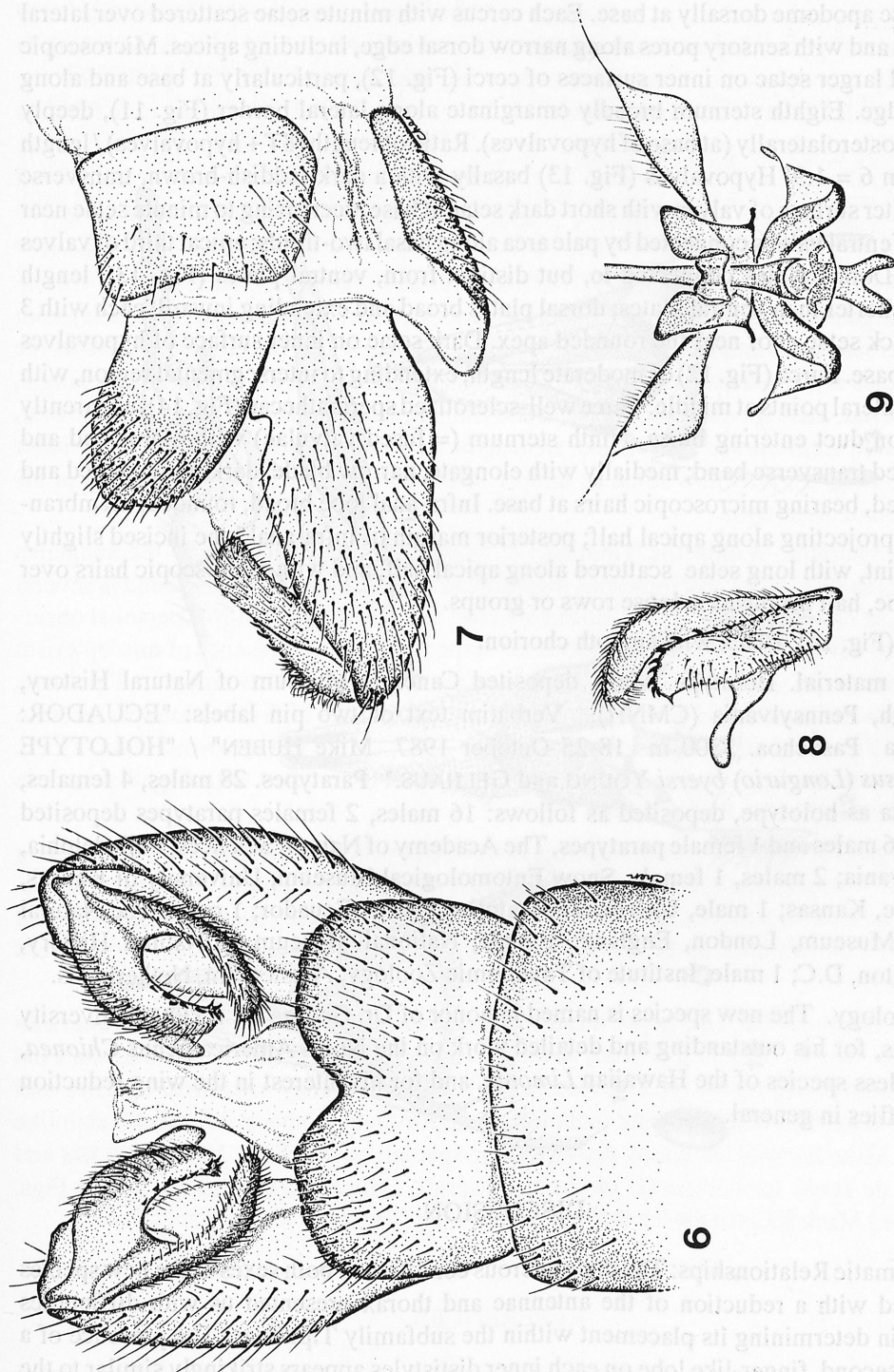
Abdomen: Abdominal sclerites mostly evenly chestnut brown. Each tergum and sternum with slightly darker, medial longitudinal line, and much darker pair of lateral longitudinal lines.

Hypopygium (Figs. 6-9): Eighth tergum (8T) rectangular, posterior border straight; eighth sternum (8S) unmodified. Ninth tergum (9T) and sternum separated; posterior margin of ninth tergum emarginate. Basistyle (BS) relatively long, slightly narrowed apically. Ratio of length 9T/BS = 0.5 (Fig. 7). Caudal half of ninth tergum and basistyle with long setae. Both dististyles elongate, fused at bases. Outer dististyle simple, spatulate, with setae of moderate length. Inner dististyle dilated at base, bent mesocaudally near middle, with truncate apex. Outer margin of inner dististyle with about ten, stout, blackened spinules. Inner dististyle with slender, slightly curved, finger-like lobe near middle (Fig. 8). Structures of vesica (Fig. 9) with short intromittent organ, not lengthened or developed distally.

Ovipositor (Figs. 10-13): Ratio of (length 8T + cerci) / (length 8S + hypovalves) = 1.2. Eighth tergum rectangular (Fig. 10), one half length of preceding terga, posterior border straight. Ninth tergum not clearly separated by intersegmental membrane from tenth tergum; length of ninth tergum one half that of eighth tergum. Tenth tergum short, slightly longer than eighth, with dark setae laterally (scate similar to that on preceding terga 1-8). Posterior sclerotized border emarginate sublaterally, border extended medially, reaching inner base of the paired cerci. Cerci of moderate length, dorsal surface flat, broad at base



Figs 2 - 5. *Leptotarsus (Longurio) byersi*: sp. n. 2, head, lateral aspect. 3, wing and haltere, dorsal aspect. 4, thorax, lateral aspect to show coxae. 5, distal end of hind leg, lateral aspect.



Figs 6 - 9. *Leptotarsus (Longurio) byersi* sp. n. - male hypopygium: 6, dorsal aspect. 7, lateral aspect. 8, inner dististyle, ventral aspect. 9, versica, dorsal aspect.

and narrowed to apex, width in lateral view scarcely diminishing to rounded apex; a transverse apodeme dorsally at base. Each cercus with minute setae scattered over lateral surfaces, and with sensory pores along narrow dorsal edge, including apices. Microscopic hairs and larger setae on inner surfaces of cerci (Fig. 12), particularly at base and along lateral edge. Eighth sternum broadly emarginate along lateral border (Fig. 11), deeply incised posterolaterally (at base of hypoalves). Ratio of length (8T + hypoalves)/length of tergum 6 = 1.9. Hypoalves (Fig. 13) basally with a dark reddish-brown, transverse band. Outer surface of valves with short dark setae at base, decreasing to minute setae near apices. Ventral valves connected by pale area along basal two-thirds; apical third of valves distinct. Dorsal plates connected to, but distinct from, ventral plates (Fig. 13), length slightly shorter than ventral plates; dorsal plates broad and extending inward, each with 3 short, thick setae at or near the rounded apex. Dark setae on inner surface of hypoalves near the base. Furca (Fig. 12) of moderate length, extending to intersegmental region, with a pair of lateral points at middle. Three well-sclerotized spermathecae (Fig. 14); apparently a common duct entering bursa. Ninth sternum (= fused valvulae) with pigmented and sclerotized transverse band; medially with elongate, narrow blade, darkly pigmented and sclerotized, bearing microscopic hairs at base. Infra-anal lobe broad, rounded, membranous, and projecting along apical half; posterior margin of infra-anal lobe incised slightly at midpoint, with long setae scattered along apical half, and with microscopic hairs over entire lobe, hair arranged in loose rows or groups.

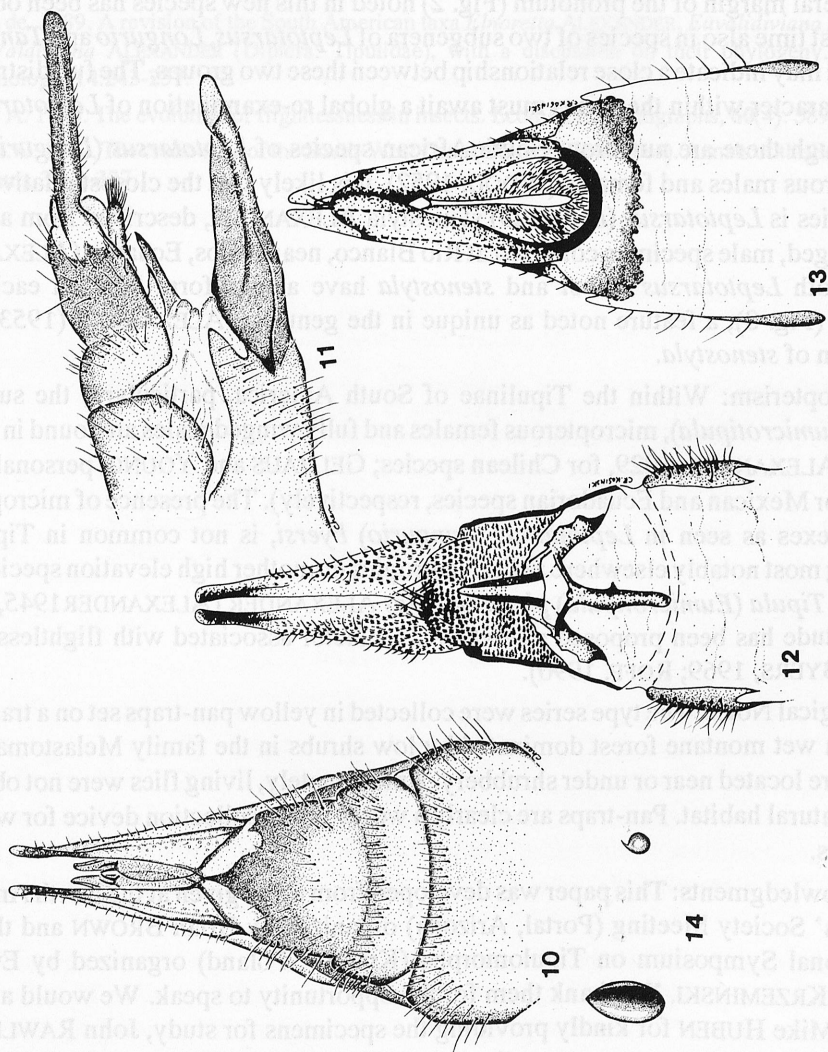
Eggs (Fig. 14): Black with smooth chorion.

Type material. Holotype. Male, deposited Canergie Museum of Natural History, Pittsburgh, Pennsylvania (CMNH). Verbatim text of two pin labels: "ECUADOR: Pichincha Paschoa. 3300 m 18-25 October 1987 Mike HUBEN" / "HOLOTYPE *Leptotarsus (Longurio) byersi* YOUNG and GELHAUS." Paratypes. 28 males, 4 females, same data as holotype, deposited as follows: 16 males, 2 females paratypes deposited CMNH; 6 males and 1 female paratypes, The Academy of Natural Sciences, Philadelphia, Pennsylvania; 2 males, 1 female, Snow Entomological Museum, University of Kansas, Lawrence, Kansas; 1 male, Universidad Catolica, Quito, Ecuador; 1 male, The Natural History Museum, London, England; 1 male, National Museum of Natural History, Washington, D.C; 1 male, Institute of Taxonomic Zoology, Amsterdam, Netherlands.

Etymology. The new species is named in honor of Dr. George W. BYERS, University of Kansas, for his outstanding and detailed work on the North America genus *Chionea*, the wingless species of the Hawaiian *Limonia*, and for his interest in the wing reduction of crane flies in general.

DISCUSSION

Systematic Relationships: The micropterous condition of both sexes of the new species associated with a reduction of the antennae and thorax presented us with difficulties initially in determining its placement within the subfamily Tipulinae. The presence of a distinct, second, finger-like lobe on each inner dististyles appears strikingly similar to the Chilean genus *Elnoretta* ALEXANDER, but the new species lacks derived features cited by



Figs 10 - 14. *Leptotarsus (Longurio) byersi* sp. n. - female ovipositor: 10, dorsal aspect. 11, lateral aspect. 12, cerci, ventral aspect. 13, hypovalves, dorsal aspect. 14, egg and spermatheca.

de JONG (1989) as characterizing the clade in which *Elnoretta* is placed, such as large prescutal pits and a reduction in number of tibial spurs. The new species is tentatively placed in the genus *Leptotarsus*, a large and diverse assemblage of species which is doubtfully monophyletic. Characters supporting the placement of the species are the elongate male basistyle and dark spinules on the inner dististyle; admittedly, both features are possibly plesiomorphic at this level. In addition, though, the translucent patch of the anterolateral margin of the pronotum (Fig. 2) noted in this new species has been observed for the first time also in species of two subgenera of *Leptotarsus*, *Longurio* and *Tanupremnella*, and may indicate a close relationship between these two groups. The full distribution of this character within the genus must await a global re-examination of *Leptotarsus*.

Although there are numerous South African species of *Leptotarsus* (*Longurio*) with micropterous males and females (WOOD, 1952), it is likely that the closest relative of the new species is *Leptotarsus* (*Longurio*) *stenostyla* ALEXANDER, described from a single, fully-winged, male specimen collected at Rio Blanco, near Banos, Ecuador (ALEXANDER, 1953). Both *Leptotarsus byersi* and *stenostyla* have a digitiform lobe on each inner dististyle (Fig. 8), a feature noted as unique in the genus by ALEXANDER (1953) in his discussion of *stenostyla*.

Micropterism: Within the Tipulinae of South America, particularly the subgenus *Tipula* (*Eumicrotipula*), micropterous females and fully winged males are found in several species (ALEXANDER, 1929, for Chilean species; GELHAUS and YOUNG, personal observations for Mexican and Ecuadorian species, respectively). The presence of micropterism in both sexes as seen in *Leptotarsus* (*Longurio*) *byersi*, is not common in Tipulinae, occurring most notably elsewhere in the Neotropics in another high elevation species from Ecuador, *Tipula* (*Eumicrotipula*) *phalangioides* ALEXANDER (ALEXANDER 1945, 1953). High altitude has been proposed elsewhere as a factor associated with flightlessness in insects (BYERS, 1969; ROFF, 1990).

Biological Notes: The type series were collected in yellow pan-traps set on a trail along a ridge in wet montane forest dominated by low shrubs in the family Melastomataceae. Traps were located near or under shrubbery. Unfortunately, living flies were not observed in their natural habitat. Pan-traps are clearly a worth-while collection device for wingless crane flies.

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KRZEMIŃSKI W. 1992. Limoniidae (Diptera, Nematocera) from Dominican amber. Genus *Molophilus* CURTIS 1833. *Acta zool. cracov.*, 35(1): 107-111.

Abstract. A new subgenus, *Mimomolophilus*, with one fossil species, *Molophilus (Mimomolophilus) theischingeri* n. sp. (Haplax, Limoniidae) from Dominican amber (Lower Miocene) is described. This is the first fossil known for this genus.

Key words: Dominican, amber, Miocene, fossil, *Molophilus*, Limoniidae.

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INTRODUCTION

Dominican amber was first recorded by Christopher Columbus in 1492-93 (HALL 1891). Its age is generally accepted to be Lower Miocene (BARCO-LEANDI & STEPHENS 1980) and estimated at 20 - 30 million years. However, LAMPERT *et al.* (1985) proved that this amber is not uniform and varies according to its place of origin; consequently, its age may vary from 15 - 40 million years. Unfortunately, in the museum collections available to me, the localities are not mentioned and the specimens are labeled merely as "Dominican amber".

I had the opportunity to study two collections of Limoniidae in Dominican amber: from the American Museum of Natural History in New York (AMNH) (13 specimens) and the Smithsonian Institution, Washington, D.C. (SI) (34 specimens). The genera represented are listed below.

Limoniidae	AMNH	SI
1. <i>Australimnophila</i> ALEXANDER	0 specimens	1 specimen
2. <i>Dicranomyia</i> (s. lato) STEPHENS	8 specimens	7 specimens
3. <i>Elephantomyia</i> OSTEN-SACKEN	0 specimens	1 specimen

