

A new species of *Oenoptila* WARREN, 1895 from the Andes (Lepidoptera: Geometridae, Ennominae)

● GUNNAR BREHM

Abstract. *Oenoptila anetteae* sp. nov. from tropical montane rain forests of Ecuador, Peru and Bolivia is described. The habitus, male, and female genitalia are illustrated.

Key words. Geometridae, Ecuador, Andes, cloud forest, rain forest, new species.

Zusammenfassung. *Oenoptila anetteae* sp. nov. aus tropischen Bergregenwäldern Ecuadors, Perus und Boliviens wird beschrieben. Der Falter sowie die männlichen und weiblichen Genitalapparate werden dargestellt.

(ZSM); 2 ♂, T1–5 (5), 3°58.94' S, 79°04.84' W, 7.V.1999, LF 20.00–20.30 h, 2212 m, G. BREHM leg. (genitalia examined in one); 2 ♂, same site, but 17.V.1999, LF 19.30–20.00 h and 20.00–20.30 h, 2212 m, G. BREHM leg. (genitalia examined in one) (SMNS and BMNH); 1 ♂, same site, but 18.X.1999, LF 19.30–20.00 h, 2212 m, D. SÜßENBACH leg.; 1 ♂, T2–6 (13), 3°59.03' S, 79°04.68' W, 2.XI.1999, at light 18.30–21.30 h, 2290 m, G. BREHM leg.; 1 ♂, T1–6 (6), 3°59.25' S, 79°04.68' W, 9.V.1999, LF 20.00–20.30 h, 2308 m, G. BREHM leg. (genitalia examined); 1 ♂, T2–7 (14), 3°59.17' S, 79°04.84' W, 6.V.1999, LF 20.00–20.30 h, 2387 m, D. SÜßENBACH leg. (genitalia examined); 1 ♂ T1–9 (16), 3°59.56' S, 79°04.26' W, 16.XII.1999, LF 19.30–20.00 h, 2558 m, D. SÜßENBACH leg. (genitalia examined).

Males and females collected in other regions. 1 ♀, Peru: Carabaya, S[outh] A[merica] (AMNH); 1 ♂, 1 ♀, Bolivia: Incachaca, Cochabamba, J. Steinbach (USNM); 1 ♀, Bolivia: La Paz, Undavi to Coroico, Yungas de la Paz, 3000 m, Jan. 1–5, 1976, L. E. PEÑA (AMNH); 1 ♀, Bolivia: La Paz, Undavi to Coroico, 3000 m, Nov.19, 1984, LUIS E. PEÑA (AMNH) (Fig. 3).

Introduction

With more than 21000 species worldwide, the Geometridae is one of the three largest families of Lepidoptera. Almost every third described species of this group occurs in the Neotropical region (GASTON et al. 1995). In studies in the Andes of southern Ecuador, BREHM (2002) and BREHM et al. (2003) showed that geometrid moths have their worldwide diversity hotspot in this region. So far, more than 1000 species were found in an area of approximately 40 km². About one-third of these species need to be described as new species. One of the most conspicuous and remarkable species is herein described. Most specimens investigated were collected in 1999 and 2000 in southern Ecuador. Some additional specimens were found in both the USNM and AMNH among unsorted material. So far, the larval stages and hostplants of the new species are unknown.

Acronyms used are AMNH (American Museum of Natural History, New York), BMNH (The Natural History Museum, London), SMNS (Staatliches Museum für Naturkunde, Stuttgart), USNM (National Museum of Natural History, Smithsonian Institution, Washington D.C.), and ZSM (Zoologische Staatssammlung, München).

Oenoptila anetteae sp. nov.

(Figs 1a, b, 2, 3)

Holotype. ♂, Ecuador: Zamora-Chinchipe, Estación Científica San Francisco forest, T2-4 (11), 3°58.52' S, 79°04.46' W,

13.V.1999, L[icht] F[ang] 20.00–20.30h, 2113 m, D. SÜßENBACH leg. (SMNS) (Figs 1, 2).

Paratypes. Most specimens were collected in the same area as the holotype: Ecuador: Zamora-Chinchipe, Estación Científica San Francisco forest (all SMNS, except differently indicated). They are listed firstly in order of elevation and secondly by date. 4 ♂, with same data as holotype, except for time of catch: 19.30–20.00 h (genitalia examined in one), 1 ♂ 14.X.1999, 21.00–21.30 h, G. BREHM leg.; 2 ♂, T1–4 (4), 3°58.85' S, 79°05.01' W, 10.V.1999, LF 20.00–20.30 h, 2112 m, D. SÜßENBACH leg. (genitalia examined in one); 1 ♂, T2–5 (12), 3°58' S, 79°04' W, 29.XII.1999, LF 21.00–21.30 h, 2180 m, G. BREHM leg. (genitalia examined)

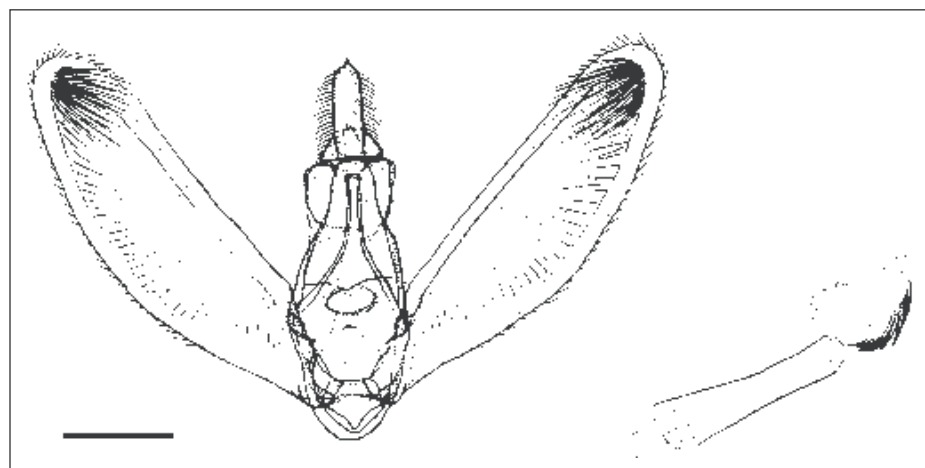


Fig. 2. Male genitalia of *Oenoptila anetteae* sp. nov. Scale bar 1 mm.

Derivatio nominis. The species is dedicated to Dr. ANETTE ESTER (Bergen, Norway).

Description. *Wings and thorax* (Fig. 1). Wingspan 32–42 mm ($n = 19 \text{ ♂}$) and 40–45 mm ($n = 4 \text{ ♀}$). The species is characterised by a vivid red colour of the wing uppersides (Fig. 1a). Males and females are similar except in size. The postmedial line of the forewing is dark red and accompanied by one up to three (rarely four) white spots. The largest of these spots is oval-shaped between the anterior cubital vein (CuA_2) and anal vein ($1A + 2A$). The basal area of both forewing and hindwing is entirely red, and has many hairy scales on the forewing. In the terminal region of both wings only the region around the veins is vividly red whereas the area between the veins is more greyish with fewer dark red scales. The terminal area and veins in the basal area are scattered with whitish scales. The fringes are red. The white costal band of the forewing is strongly contrasting with the rest of the wing. A fovea is absent. The wing undersides (Fig. 1b) are brighter coloured than the uppersides, particularly towards the base. Veins on the undersides are ochreous, as well as the costal bands of both forewing and hindwing. The thorax is dorsally red and ventrally ochre and red. The head is dark red. The antennae are bipectinate (very small rami) with the proximal part white, and the distal three-quarters and underside brown-ish. The bases of the antennae are white and they are connected with a narrow white band. The labial palps are red with ochreous tips. The legs are ochreous; femora of all legs have a dense ventral band of setae.

Male genitalia (Fig. 2). The uncus is crescent-shaped (in lateral view) with a pointed apex. The gnathos arms are not joined except by membranous tissue. The large valves are symmetrical; they have no processes and are the shape of hares' ears. The distal parts have a dense field of setae. The juxta is a plate; there are two weakly developed finger-like processes at the posterior end of the juxta. The aedeagus is moderately short and the vesica has 5–7 medium-sized cornuti.

Female genitalia (Fig. 3). The ductus bursae is long and ends in a medium sized corpus bursae. The signum is a strongly sclerotized hollow dentate disc.

Diagnosis and apomorphies.

Oenoptila anetteae sp. nov. is a conspicuous species that has rarely been collected before 1999. The few specimens existing in museum collections had been ignored so far. The apomorphies of the new species are its vivid red colour with the contrasting white spots, whitish scales and the white costal band on the forewing, which makes the moth unmistakable. It is placed into the genus *Oenoptila* Ennominae, tribe Caberini (WARREN 1895), because it shares the chief apomorphy of the genus, the finger-like processes at the posterior end of the juxta (PITKIN 2002). However, the placement in *Oenoptila* is tentative, without full revision of the genus, because *O. anetteae* sp. nov. has some atypical characters. The processes of the juxta are very weakly developed and not as prominent as in other members of the genus. Moreover, there are no ventral lobes or distal processes of the valvae as is typical in other *Oenoptila* species. All other species in other *Oenoptila* species have brown wings with only orange or reddish tinges, but never an extensive vivid red ground colour as in the new species. A revision of the genus and its relatives is also required because a large number of species formerly assigned to *Oenoptila* were excluded from the genus by PITKIN (2002) and need new placement. Unfortunately, Dr. D. FERGUSON (USDA, at the Smithsonian Institution, Washington) who was in the process of revising some of these, died in 2002.

Distribution and habitat.

The species is known only from the Eastern Cordillera of the Andes in southern Ecuador (18 specimens), southern Peru (1 specimen) and northern Bolivia (4 specimens). The latitudinal range is between ca. 4° and 18°S while the longitudinal range is between 66° and 79°W . So far, the species has no records from the zone between 5° and 13°S . However, this is probably due to a sampling gap in most of its potential Peruvian range. It is also possible that the species occurs further in the northern Andes (northern Ecuador to Venezuela), but currently no material is available from these regions. The species has a high montane elevational distribution and was recorded exclusively at altitudes between 2100 m and 3000 m a.s.l. Its habitats in southern Ecuador are montane cloud forests (vegetation: MADSEN & ØLLGAARD 1994, PAULSCH 2002). Habitats in Peru and Bolivia are unknown, but probab-

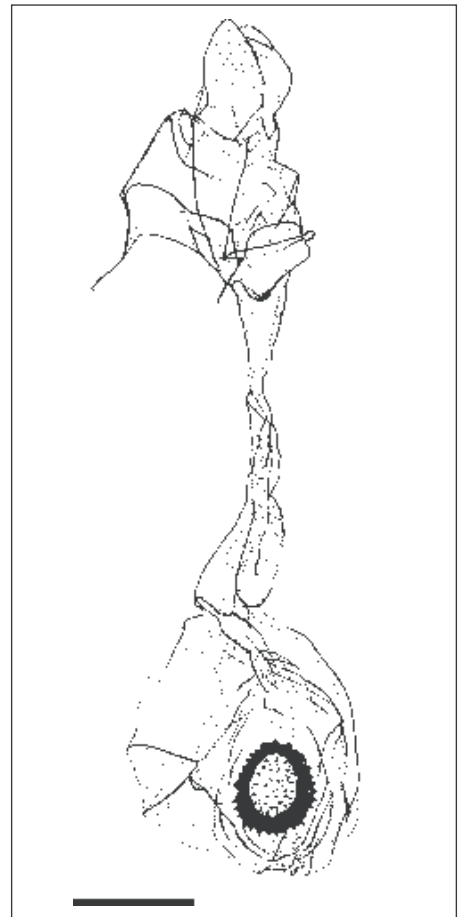


Fig. 3. Female genitalia of *Oenoptila anetteae* sp. nov. Scale bar 1 mm.

ly have a similar character. Early stages and larval hostplants await discovery, as very little is known about the ecology of Neotropical geometrid caterpillars (BREHM 2003).

Andean and sub-Andean forests have less than 4.5 % and 6.4 % respectively of their original pre-Columbian extent currently protected (ARMENTERAS et al. 2003). Due to the massive destruction of forested habitats in the Andes, the species could be threatened and might have already become locally extinct.

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Fig. 1. Male of *Oenoptila anetteae* sp. nov., upperside (a), underside (b). Scale bar 1 cm.

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● Dr. GUNNAR BREHM, Lehrstuhl für Tierökologie I, Universität Bayreuth, Universitätsstraße 30, 95440 Bayreuth, Germany; E-mail: Gunnar_Brehm@yahoo.com