

**New Neotropical *Edaphus*-species (Coleoptera: Staphylinidae)\***

by

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**Abstract**

26 new Neotropical species of the genus *Edaphus* MOTSCHULSKY are described: *Edaphus amigo* n.sp. (Costa Rica), *E. andersonianus* n.sp. (Panama, Costa Rica), *E. apo* n.sp. (Peru, Ecuador), *E. bierigi* n.sp. (Costa Rica), *E. bolivianus* n.sp. (Bolivia), *E. caballero* n.sp. (Panama), *E. chinan* n.sp. (Ecuador), *E. cinche* n.sp. (Peru), *E. david* n.sp. (Venezuela), *E. dybasi* n.sp. (Panama, Costa Rica), *E. eliab* n.sp. (Venezuela), *E. gallinaceus* n.sp. (Costa Rica, Panama), *E. goliath* n.sp. (Venezuela), *E. hidalgo* n.sp. (Panama, Costa Rica), *E. kapac* n.sp. (Ecuador), *E. kethleyi* n.sp. (Costa Rica), *E. limbipennis* n.sp. (Ecuador), *E. newtoni* n.sp. (Panama), *E. panamensis* n.sp. (Panama), *E. similifactus* n.sp. (Bolivia), *E. siphonifer* n.sp. (French Guyana, Peru), *E. subtilipunctatus* n.sp. (Venezuela), *E. sulcatipennis* n.sp. (Venezuela), *E. villac* n.sp. (Ecuador, Peru), *E. wagneri* n.sp. (Costa Rica), *E. wagnerianus* n.sp. (Costa Rica).

Keywords: **Coleoptera, Central America, South America, Staphylinidae, Euaesthetinae, *Edaphus*, new species.**

**Resumo**

26 novas espécies neotropicais do gênero *Edaphus* MOTSCHULSKY são descritas: *Edaphus amigo* n.sp. (Costa Rica), *E. andersonianus* n.sp. (Panama, Costa Rica), *E. apo* n.sp. (Peru, Ecuador), *E. bierigi* n.sp. (Costa Rica), *E. bolivianus* n.sp. (Bolivia), *E. caballero* n.sp. (Panama), *E. chinan* n.sp. (Ecuador), *E. cinche* n.sp. (Peru), *E. david* n.sp. (Venezuela), *E. dybasi* n.sp. (Panama, Costa Rica), *E. eliab* n.sp. (Venezuela), *E. gallinaceus* n.sp. (Costa Rica, Panama), *E. goliath* n.sp. (Venezuela), *E. hidalgo* n.sp. (Panama, Costa Rica), *E. kapac* n.sp. (Ecuador), *E. kethleyi* n.sp. (Costa Rica), *E. limbipennis* n.sp. (Ecuador), *E. newtoni* n.sp. (Panama), *E. panamensis* n.sp. (Panama), *E. similifactus* n.sp. (Bolivia), *E. siphonifer* n.sp. (French Guyana, Peru), *E. subtilipunctatus* n.sp. (Venezuela), *E. sulcatipennis* n.sp. (Venezuela), *E. villac* n.sp. (Ecuador, Peru), *E. wagneri* n.sp. (Costa Rica), *E. wagnerianus* n.sp. (Costa Rica).

**Zusammenfassung**

26 neue neotropische Arten der Gattung *Edaphus* MOTSCHULSKY werden beschrieben: *Edaphus amigo* n.sp. (Costa Rica), *E. andersonianus* n.sp. (Panama, Costa Rica), *E. apo* n.sp. (Peru, Ecuador), *E. bierigi* n.sp. (Costa Rica), *E. bolivianus* n.sp. (Bolivien), *E. caballero* n.sp. (Panama), *E. chinan* n.sp. (Ecuador), *E. cinche* n.sp. (Peru), *E. david* n.sp. (Venezuela), *E. dybasi* n.sp. (Panama, Costa Rica), *E. eliab* n.sp.

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\*94<sup>th</sup> contribution to the knowledge of Euaesthetinae.

(Venezuela), *E. gallinaceus* n.sp. (Costa Rica, Panama), *E. goliath* n.sp. (Venezuela), *E. hidalgo* n.sp. (Panama, Costa Rica), *E. kapac* n.sp. (Ecuador), *E. kethleyi* n.sp. (Costa Rica), *E. limbipennis* n.sp. (Ecuador), *E. newtoni* n.sp. (Panama), *E. panamensis* n.sp. (Panama), *E. similifactus* n.sp. (Bolivien), *E. siphonifer* n.sp. (Französisch Guyana, Peru), *E. subtilipunctatus* n.sp. (Venezuela), *E. sulcatipennis* n.sp. (Venezuela); *E. villac* n.sp. (Ecuador, Peru), *E. wagneri* n.sp. (Costa Rica), *E. wagnerianus* n.sp. (Costa Rica).

### Introduction

The genus *Edaphus* MOTSCHULSKY currently includes more than 350 species and has a worldwide distribution, with most species occurring in the Southern hemisphere. When I began to study Neotropical *Edaphus* in 1973, only 2 species were known from the Neotropics. In the meantime, species number increased to 39 and will further increase to 65 in this paper. This indicates that our knowledge of these minute insects is far from complete. Thanks to careful collecting using various methods, mainly by colleagues at the Field Museum of Natural History, Chicago, and the staff of the Natural History Museum of the Kansas University, a large amount of material is now available, which will be treated step by step.

At present, grouping species into tentative phylogenetic units is not possible, although one group (species with special abdominal atrium-structures) has already been defined (PUTHZ 1997). Based on the immense diversity of male genitalia in Neotropical *Edaphus*, numerous groups may have to be formed. The twofold sperm pump, described previously for the African group of *Edaphus franzi* PUTHZ (PUTHZ 1990: 216, 218), is also found in Neotropical species (Fig. 40). A new type of *vesica seminalis* was found in *Edaphus kethleyi* n.sp. (Fig. 23). A sexual dimorphism of wing length, as already known from African species, is also found in some Neotropical *Edaphus* (e.g. *E. wagnerianus* n.sp., *E. subtilipunctatus* n.sp.). Considerable differences in body size were observed in the treated material: *Edaphus goliath* n.sp. is the largest *Edaphus* of the world; compared to this variable species, *E. david* n.sp. is minute (see Figs. 2, 3).

*Edaphus* species are edaphic and mostly collected by sifting and in flight interception traps.

### Material and methods

In the descriptions the following abbreviations are used (see Fig. 1): alF = antero-lateral furrows of frons; alpF = antero-lateral portions of frons; ampF = antero-medial portion of frons; dE = distance between eyes; dlbc = distance of latero-basal carinae of pronotum; FIT = flight interception trap; HT = holotype; lbc = latero-basal carina of pronotum; lbf = latero-basal foveae of pronotum; lEl = maximal length of elytra; lE = length of eyes; lG = length of genae; lP = length of pronotum; lS = length of suture; lT = length of temples; mbc = medio-basal carina of pronotum; mbct3 = medio-basal carina on posterior part of tergite 3; mbf = medio-basal foveae of pronotum; PM = proportional measurements (1 unit = 0.0085 mm); PT = paratype; pttF = postero-transverse furrow of frons; shC = special humeral characters; SpP = sperm pump; vs = vesica seminalis; wEl = maximal width of elytra; wH = width of head; wP = width of pronotum.

Acronyms for museums and private collections:

AMNH = American Museum of Natural History, New York

FMCh = Field Museum of Natural History, Chicago

MHNG = Muséum d'histoire naturelle, Geneva

NHMK = Natural History Museum University of Kansas, Lawrence, KS

cP = coll. PUTHZ

## Taxonomic part

### *Edaphus goliath* n.sp. (Figs. 2, 4-7)

Holotype (♂) and 1 ♂-paratype: Venezuela: Tachira: 10 km SE San Cristobal, P.N. Chorro El Indio, 1320 m, 7°44.03'N, 72°13.01'W, upper montane forest litter, 29.05.1998, R. ANDERSON. Paratypes: 1 ♂: Aragua: Rancho Grande Biological Station, Pico Periquitos, 1300 m, 10°21.0'N, 67°41.0'W, cloud forest litter, 13.05.1998, idem; 3 ♂♂, 4 ♀♀: Bolivia: Sucumbios: Sacha Lodge, 0°5'S, 76°5'W, 270 m, malaise trap, 24.05.-03.06.1994, HIBBS.- HT and PTT in NHMK, 3 PTT in cP.

Fully winged, chestnut-brown, shiny, almost impunctate (except insertions of pubescence); pubescence long, erect on pronotum, semi-erect on elytra. Antennae brown, maxillary palpi light brown, legs brownish, tarsi light brown.

Length: 2.5-5.1 mm (forebody 1.4-2.5 mm).

PM of HT: wH: 87; dE: 58; IE: 25; IT: 0; IG: 5; wP: 100; IP: 79; wEl: 154; IEl: 128; IS: 104.

Male: Segment 10 and 11 of antennae prolonged (Fig. 5). Sternite 7 very shallowly emarginate at posterior margin. Sternite 8 (Fig. 7). Sternite 9 (Fig. 6). SpP nearly 2/3 as long as the median lobe, vs small, about 1/4 as long as the median lobe. Aedeagus (Fig. 4), median lobe with two stout and two fine setae in anterior half; parameres shorter than median lobe, each with two short apical setae and one short medial seta.

Female: Antennae shorter than in the male, last segments less extended (Fig. 5).

Head narrower than pronotum, eyes large, prominent, temples absent, frons moderately broad, ptff absent, ampF half as broad as the slightly convex alpF, clypeus simple, no punctation. Antennae as in Fig. 5. Pronotum much broader than long, anterior margin with a narrow edge laterally, base with strong lbc (distance: 77), mbc extending to base, with 6 basal foveae, the para-median ones very close, the lateral ones smaller than the other foveae, of which the intermedial fovea is the largest and mostly oval; without punctation, but with dense pubescence. Elytra much broader than long, humeral angles rectangular; with a deep humeral impression, which is delimited by a sharp ridge anteriorly and posteriorly; without punctation, but with dense pubescence. Mbct3 two thirds as long as the posterior tergite.

This is the largest *Edaphus* species. The size is highly variable: the smallest specimens (paratypes from Ecuador) are nearly half as long as the longest specimens (from Venezuela). Size and distance between mbf are variable, the distance is much smaller in the specimens from Ecuador than in those from Venezuela, but there are no significant differences in the male sexual characters. - The new species is easily distinguished by the size and the antennal dimorphism.

Named after Goliath, Philister of extraordinary body size (1. Sam, 14).

### *Edaphus sulcatipennis* n.sp.

Holotype (♂): Venezuela: Trujillo: Paramo La Cristallina, Old Trujillo Road km 9.7, 2400 m, 9°21.21'N, 70°17.51'W, elfin forest litter, 30.05.1998, R. ANDERSON: in NHMK.

Brachypterous, castaneous, strongly shiny, elytra with a long curved sulcus; except for the frons and the humeral area of elytra almost impunctate (microscopically fine insertions of setae at 60 x barely noticeable); pubescence moderately dense, recumbent. Maxillary palpi yellowish, antennae and legs brown.

Length: 3.4-4.0 mm (forebody 2.0 mm).

PM of HT: wH: 87; dE: 61; IE: 23; IT: 0; IG: 10; wP: 116; IP: 96; wEl: 162; IEl: 118; IS: 88.

Male: Antennal segments 10 and 11 very long, segment 10 cylindrical, one third longer than broad, segment 11 slightly longer than segment 10. Sternite 4-7 with a narrow and shallow emargination apico-medially, posterior margin of sternite 7 slightly curved ventrad. Sternite 8 with a very deep emargination in apical half. Sternite 9 with a distinct apico-median tip. SpP nearly twice as long as the median lobe, double trumpet indistinctly developed, vs nearly 1/3 as long as the median lobe. Dorsal lobe of anterior median lobe narrowly triangular (axe-shaped in lateral view) with two moderately strong setae, ventral lobe broadly lanceolate with two lateral and one medial part; internal sac with a strongly sclerotized unguiculate injection piece; parameres shorter than the median lobe, each with one apical, one subapical (apically split !) setae and one seta in about longitudinal middle.

Head much narrower than pronotum, eyes moderately large, temples absent, ptff incomplete, present

only in lateral third, ampF less than 1.5 x as broad as each of the alfF, flat with a shallow depression postero-medially; punctation fine and dense, distinct. Antennae with a 2-segmented club. Pronotum markedly convex, much broader than long, strongly constricted behind, with 6 small mbf, the two medial ones close together, lbc and mbc absent; setae sparse. Elytra strongly trapezoid with a long curved sulcus (beginning shortly behind humeral angles, then curved inwards, extending to the posterior quarter of elytra); fine and moderately dense punctation near humeral angles, remaining surface only with sparse, microscopically fine insertions of setae. Mbct3 short, about 1/3 as long as the posterior tergite.

This new species is easily distinguished from all Neotropical *Edaphus* by the elytral sulcus.

The name refers to the distinctively modified elytra (Lat. *sulcatipennis* = with sulcate elytra).

#### ***Edaphus david* n.sp. (Figs. 3, 8, 9)**

Holotype (♂) and 1 ♀-paratype: Venezuela: Trujillo: Paramo La Cristallina, Old Trujillo Road km 9.7, 2400 m, 9°21.21'N, 70°17.51'W, elfin forest litter, 20.05.1998, R. ANDERSON; 1 ♀-paratype: Old Trujillo Road km 6.0, 2240 m, 9°21.03'N, 70°17.36'W, cloud forest litter, 20.05.1998, idem.- HT and 1 PT in NHMK, 1 PT in cP.

Brachypterous, light brown, finely and densely punctate; pubescence dense, recumbent. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.0-1.4 mm (forebody 0.6-0.7 mm).

PM of HT: wH: 34; dE: 25; IE: 8; IT: 0; IG: 7; wP: 36; IP: 32; wEl: 54; IEI: 35; IS: 26.

Male: Antennal segment 10 about 1/4 longer than broad, distinctly bigger and larger than segment 11. Sternite 8 (Fig. 9). Sternite 9 with a minute apico-median tip, more distinctly delimited than in Fig. 12. SpP + vs about as long as the median lobe. Aedeagus (Fig. 8), apical part of median lobe with 4 minute setae; parameres shorter than median lobe, each with a long apical and a long subapical seta.

Female: Antennal segment 10 about as broad as long and distinctly shorter than segment 11.

Head slightly narrower than pronotum, eyes with moderately coarse ommatidia, moderately large, temples absent, ptFF distinct, ampF nearly twice as broad as alpF, flat, clypeus simple, punctation fine and dense. Antennae with a 2-segmented club. Pronotum distinctly broader than long, strongly constricted behind, with 4 small mbf; punctation fine and dense. Elytra strongly trapeziform, much broader than long, humeral angles unmodified, punctation fine and dense. Mbct3 absent.

*Edaphus david* n.sp. is very similar to *E. eliab* n.sp. from which it may be distinguished by the antennal and the male sexual characters (see below). From *E. cimicoides* PUTHZ (Venezuela) it may be distinguished by larger eyes and less densely punctate elytra.

The name refers to David, a hero of the Old Testament with a small body compared to Goliath as *Edaphus david* compared to *Edaphus goliath*.

#### ***Edaphus eliab* n.sp. (Figs. 10-12)**

Holotype (♂) and 3 ♂♂, 2 ♀♀-paratypes: Venezuela: Merida: Laguna Negra, Sierra Nevada National Park, 3.300 m, 8°47.14'N, 70°48.31'W, elfin forest litter, 23.05.1998, R. ANDERSON.- HT and PTT in NHMK, 2 PTT in cP.

Brachypterous, brown, finely and densely punctate; pubescence dense, semierect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs light brown.

Length: 1.3-1.7 mm (forebody 0.7-0.75 mm).

PM of HT: wH: 37.5; dE: 29; IE: 8; IT: 0; IG: 6; wP: 40; IP: 37; wEl: 53; IEI: 35; IS: 27.

Male: Antennal segment 10 about as long as broad, segment 11 slightly longer than segment 10. Sternite 8 (Fig. 11). Sternite 9 (Fig. 12). Aedeagus (Fig. 10), median lobe with 4 minute lateral setae approximately in middle; parameres bifid, each with two long setae.

Female: Antennal segment 10 slightly broader than long, segment 11 distinctly longer than segment 10.

In nearly all respects (except sexual characters) similar to *E. david* n.sp., but larger, ptFF indistinct or very shallow, head and pronotum more finely and less densely punctate.

*Edaphus eliab* n.sp. may be distinguished from *E. david* n.sp. by the antennal and the male sexual

characters (despite similar body size the aedeagus of *E. eliab* is nearly twice as long as that of *E. david*); from *E. longepilosus* PUTHZ (Peru) it is easily distinguished by the distinct punctation.

The name refers to the similarity with *E. david* (Eliab = oldest brother of the Biblical David).

#### ***Edaphus apo* n.sp. (Figs. 13, 15)**

Holotype (♂): Peru: Cuzco Dept.: Consuelo, Manu road km 16.5, beating dead branches, 10.10.1982, L. E. WATROUS & G. MAZUREK, FMHD #82-364; 1 ♂-paratype: Ecuador: Napo: Yasumi Reseach Station in mid. Rio Tiputini, 8°40.05'S, 76°24'W, FIT #1, 11.-18.07.1999, A. TISHECHKIN.- HT in the FMCh, PT in NHMK.

Macropterous, reddish brown, shiny, head and pronotum impunctate, except for the microscopically fine insertions of setae, elytra very finely and densely punctate, abdomen with microscopically fine punctures; pubescence short, dense, semierect. Antennae, maxillary palpi and legs brownish.

Length: 1.8-2.1 mm (forebody 1.2 mm).

PM of HT: wH: 58; dE: 41; IE: 14; IT: 0; IG: 1.5; wP: 59; IP: 46; wEl: 85; lEl: 78; IS: 65.

Male: Antennal segment 9 of similar length as segment 11, but slightly broader, 1/4 longer than broad, segment 10 distinctly longer than segment 9 (15: 12) and 1/3 longer than broad. Sternite 8 (Fig. 15). Sternite 9 with a prominent apico-median tip. SpP twice as long as the median lobe, sclerotized double trumpet absent, vs strongly sclerotized, as long as the median lobe broad. Aedeagus (Fig. 13), parameres each with a thin apical seta.

Head slightly narrower than pronotum, eyes large, with coarse ommatidia, temples absent, ptff distinct, ampF concave, more than two times as broad as each of the alpF, clypeus simple; alpF with two setiferous punctures. Antennae with a 3-segmented club. Pronotum much broader than long, moderately concave postero-laterally, lbc and mbc absent, but 8 small dorsal mbf and 1 small lateral fovea on each side distinct. Elytra very large, humeral angles unmodified, punctation very fine, interstices twice as large as punctures. Mbct3 absent.

Variability. In the paratype from Ecuador the antennal segment 10 is as long as segment 11.

This new species is closely related to *E. peruanus* PUTHZ, *E. bufo* PUTHZ and *E. kapac* n.sp. It may be distinguished from the former two by much broader head and longer elytra, from *E. kapac* by shorter length, less broad and nearly impunctate pronotum, from all by the male sexual characters.

Named after the Inka word for "Sir".

#### ***Edaphus kapac* n.sp. (Figs. 14, 17)**

Holotype (♂) (left elytron missing): Ecuador: Napo: 15 km S. Baeza on road to Tena, 1800 m, primary forest litter berlesate, 28.04.1990, C. CARLTON: in NHMK.

Macropterous, yellowish brown (somewhat immature), moderately shiny, very finely and densely punctate; pubescence moderately long, dense, semierect on pronotum, recumbent on the remaining surface. Antennae, palpi and legs yellowish.

Length: 2.2-2.6 mm (forebody 1.4 mm).

PM of HT: wH: 63; dE: 44; IE: 16; IT: 0; IG: 3; wP: 69; IP: 58; wEl: 104; lEl: 100; IS: 75.

Male: Antennal segment 10 much longer than segment 9 (17: 13) and much longer than broad (17: 11.5), segment 9 about 1/3 longer than broad, segment 11 slightly shorter than segment 10. Sternite 8 (Fig. 17). Sternite 9 with a prominent apico-median tip. SpP, double trumpet and vs as in *E. apo*. Aedeagus (Fig. 14), parameres only free at slightly swollen apex, with one minute apical seta and one longer seta in basal third.

In nearly all respects very close to *E. apo*, but the relations of body proportions different, the pronotum very finely, densely, and distinctly punctate, the pubescence and very fine punctation of the abdomen denser.

This new species is close to *E. apo* n.sp. and may be distinguished by larger body size and the male sexual characters.

Named after the Inka word for "pompous".

### ***Edaphus hidalgo* n.sp. (Fig. 16)**

Holotype (♂) Panama: Chiriqui: 12 km W El Hato del Volcan, 4500 feet, berlese litter, cloud forest, 27.06.1976, A. NEWTON. Paratypes: 2 ♀♀: Chiriqui: 27.7 km W Volcan Hartmann's Finca, 1450 m, 8°51.48'N, 82°44.36'W, berlese forest litter, R. ANDERSON. Costa Rica: 1 ♂, 2 ♀♀-paratypes: Costa Rica: Puntarenas: OTS Sta. finca Las Cruces, 4000 feet: San Vito, 8°46'N, 82°58'W, Berlese banana root litter conc. 800 cc., West ravine, 16.03.1973, J. WAGNER & J. KETHLEY; 2 ♂♂, 1 ♀: Las Cruces Biol. Station, 1330 m, 8°47.14'N, 82°57.58'W, FIT, 28.-31.05.2004, J.S. ASHE et al.; 1 ♂: Las Alturas (Stanford Biological Station), 29 km NE San Vito, 1500 m, FIT, 27.05.1993, J.S. & A.K. ASHE; 1 ♀: Puntarenas: R.F. Golfo Dulce, 3 km SW Rincon, 10 m, 06. 1991, P. HANSON; 1 ♂: Rincon de Osa, 50 m, 8°41.141'N, 83°31.117'W, FIT, 23.-26.06.2001, S. & J. PECK; 1 ♂: Corcovado National Park, Sirena Station, Corcovado Trail, 150 m, 8°29.07'N, 83°34.39'W, FIT, 28.06. - 1.07.2000, Z.H. FALIN; 2 ♀♀: Altamira Biological Station, 1510-1600 m, 9°01.76'N, 83°00.49'W, FIT, 4.07.2004, J.S. ASHE et al.; 1 ♂: Monteverde: Estacion Biologica Monteverde, 1540 m, 10°19.40'N, 84°49.08'W, montane forest litter, 9.06.2001, R. ANDERSON; 1 ♀: Guanacaste: Cacao Biological Station, 1100-1200 m, 10°56.0'N, 85°27.0'W, berlese leaf litter, idem.- HT and 1 PT in FMCh, PTT also in NHMK and in cP.

Macropterous, reddish brown; shiny, extremely finely and densely punctate; pubescence dense, erect on pronotum, recumbent on the remaining surface. Base of antennae brown, club yellowish brown. Maxillary palpi and legs yellowish brown.

Length: 1.5-1.9 mm (forebody 0.95 mm).

PM of HT: wH: 44; dE: 30; IE: 12; IT: 0; IG: 4; wP: 46; IP: 37; dlbc: 33; wEl: 70; lEl: 621; IS: 50.

Male: Antennal segment 10 1/4 longer than broad, about as long as segment 11. Sternite 7 with a broad and shallow apical emargination. Sternite 8 (Fig. 16). Sternite 9 with a long apico-median tip. SpP about twice as long as the median lobe, double trumpet indistinct, vs very small. Aedeagus similar to that of *E. apo* (see Fig. 13), internal structures with a forked piece; parameres with a minute, short apical seta.

Female: Antennal segment 10 slightly longer than broad, segment 11 about 1/3 longer than segment 10.

In most respects similar to *E. apo* n.sp., but the pronotum with distinct (but very narrow) lbc and 6-8 mbf; microscopically fine punctation of the pronotum denser than in *E. apo*.

This new species is very similar to *E. caballero* n.sp., from which it may be distinguished by the narrow, distinctly (although very finely) punctate pronotum, from *E. apo* n.sp. and *E. kapac* n.sp. by the presence of lbc, from all by the male sexual characters.

Named after a Spanish nobleman.

### ***Edaphus caballero* n.sp. (Fig. 18)**

Holotype (♂): Panama: Gativa, 09.-10.1938, A. BIERIG [The specimen was cleaned from mould, the pubescence therefore was partly rubbed off.]. Paratypes: 2 ♂♂: Coclé: 7.2 km NE El Coclé, 730 m, 8°37'N, 80°35'W, FIT, 20.05.-7.06.1995, J. ASHE; 2 ♂♂: ibidem, berlese forest litter, 7.06.1995, R. ANDERSON; 1 ♂: Darien: Estacion Ambiental Cana, Cerro Pirre, 1450 m, 7°45.20'N, 77°41.06'W, cloud forest litter, 6.06.1996, R. ANDERSON. HT in FMCh, PTT in NHMK and in cP.

Macropterous, castaneous, shiny, impunctate (except microscopically fine insertions of setae); pubescence moderately dense (rubbed off in the HT). Antennal base brownish, club yellowish brown. Maxillary palpi and legs yellowish brown.

Length: 1.5-1.9 mm (forebody 1.0 mm).

PM of HT: wH: 51; dE: 33; IE: 14; IT: 0; IG: 2; wP: 55; IP: 42; dlbc: 37; wEl: 77; lEl: 63; IS: 49.

Male: Antennae as in *E. hidalgo*, but segment 9 as long and as broad as segment 10. Sternite 8 (Fig. 18). Sternite 9 as in *E. hidalgo*. SpP and vs as in *E. hidalgo*. Aedeagus resembling that of *E. kapac* (see Fig. 14), apical part of parameres broad with an internal apophysis.

In most respects similar to *E. hidalgo*, pronotum also with very narrow, not very distinct lbc and with 8 small mbf, but broader, no distinct punctation at 60 x. Elytra also almost impunctate (insertions of setae sparser than in *E. hidalgo*).

This new species closely resembles *E. apo* n.sp. and *E. kapac* n.sp., but may be distinguished by the

presence of lbc; from *E. hidalgo* n.sp. it may be distinguished by the almost impunctate forebody, from all by the male sexual characters.

Named after a Spanish knight horseman.

### ***Edaphus panamensis* n.sp. (Figs. 19, 20)**

Holotype (♂): Panama: Cerro Campana, 3200 feet, berlese cloud forest leaf litter, 17.06.1976, A. NEWTON: in FMCh.

Macropterous, reddish brown, extremely finely, densely punctate (insertions of setae); pubescence dense, erect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish.

Length: 1.2-1.5 mm (forebody 0.8 mm).

PM of HT: wH: 36; dE: 25; IE: 11; IT: 0; IG: 5; wP: 36; lP: 33; wEl: 59; lEl: 52; lS: 43.

Male: Sternite 8 (Fig. 20). Sternite 9 with a distinct apico-median tip. SpP about as broad and as long as the median lobe, double trumpet strongly sclerotized, vs spindle-like, nearly as long as the median lobe. Aedeagus (Fig. 19), median lobe triangularly narrowed in apical part with some 6 minute setae, internal tube with a star-shaped piece; parameres bifid, nearly as long as the median lobe, each branch with one long seta.

Head as broad as pronotum, eyes with fine ommatidia, large, temples absent, genae about half as long as eyes, ptFF distinct, extending beyond the anterior margin of the eyes, ampF nearly twice as broad as each of the alpF, flat, alpF distinctly elevated with one setiferous puncture anteriorly, punctuation on the remaining frons absent. Antennae with a 2-segmented club, segment 10 distinctly broader than long, segment 11 1.5 x as long as segment 10. Pronotum distinctly broader than long, strongly constricted behind, lbc absent (note: at first glance lbc seem to be present, but careful inspection by illumination from different angles reveals that no true lbc are present), 4 very small mbf on each side dorsally, placed in a transverse impression; punctuation at 60 x indistinct. Elytra subquadrate, broader than long, humeral angles unmodified, punctuation extremely fine but more distinct than on pronotum. Mbct3 short, about 1/3 as long as the posterior tergite.

This new species closely resembles *E. mexicanus* PUTHZ (Mexico) and *E. costaricensis* PUTHZ (Costa Rica); it may be distinguished from both by the larger eyes (in the compared species the genae are about as long as the eyes), 8 mbf and by the male sexual characters.

Named after the country where the type locality is situated.

### ***Edaphus bierigi* n.sp. (Figs. 21, 22)**

Holotype (♂) and 1 ♀-paratype: Costa Rica: Cartago: 19 km S Tapanti, Rio Grande de Orosi, 1500 m, 9°42'N, 83°47'W, Berlese 3 liters concentrated moss on logs and loam, 14.04.1973, J. WAGNER & J. KETHLEY. Paratypes: 1 ♂: P.N. Tapanti, 1500 m, 9°45'N, 83°49'W, berlese forest litter, 04.06.1997, R. ANDERSON; 1 ♂: Cervantes, 27.04.1941, A. BIERIG; 1 ♂, 1 ♀: San Isidro-Le Estrella, 16.10.1941, idem; 1 ♀: Zarcaro, 04.1943, idem; 1 ♀: Vara Blanca, 1800-2000 m, 1936, idem; 5 ♂♂, 4 ♀♀: ibidem, 2000 m, 08.1938, idem; 1 ♂, 2 ♀♀. ibidem, 18.12.1940, idem; 1 ♀: ibidem 1800 m, 05.10.1941, idem; 1 ♀: San Jose/Cartago: km 45 Int. American Hwy, 6 km NE El Empalme, 1975 m, 9°45.0'N, 83°58.30'W, berlese forest litter, 08.06.1997, R. ANDERSON; 1 ♀: San José: La Hondura, Rio Claro, 10003'N, 83o58'W, 1150 m, Berlese stream bed leaf litter, 05.04.1973, J. WAGNER & J. KETHLEY; 1 ♂: Puntarenas: Monteverde, 29.-31.06.1992, FIT, M.L. JAMESON; 1 ♂: ibidem, 1520 m, 24.05.1989, J. ASHE et al.; 1 ♂: Monteverde Reserve, FIT, 25.05.1993, C. MICHALSKI; 3 ♂♂: ibidem, trail near lab, FIT, 26.-28.05.1993, idem; 1 ♂: ibidem, 01.06.1993, idem; 1 ♂: Monte Verde Cerro Amigos, 1780 m, FIT, 24.05.1989, J. ASHE et al.; 1 ♂, 3 ♀♀: Monteverde, Estacion Biol. Monteverde, 1540 m, 10°19.40'N, 84°49.08'W, montane forest litter, 15.05., 11., 14. & 16.06.2001, R. ANDERSON; 1 ♂: Heredia: La Selva, 3.2 km SE Puerto Viejo, 100 m, FIT, 01.03.1992, W. BELL; 2 ♂♂, 3 ♀♀: Guanacaste: Guanacaste Conservation Area, Cacao Field Station, 1200 m, wet montane forest litter, 12., 13., 20.02.1996, R. ANDERSON; 1 ♂: Alajuela: 14 km S Volcan Arenal, 1000 m, 10°20'N, 84°43'W, sifted leaf litter, 29.04.1988, J. LONGINO; 2 ♂♂: E.B. San Ramon, 27 km N & 8 km W San Ramon, 1120 m,

10°13.30'N, 84°35.30'W, wet montane forest, 29.06., 06.07.1999, R. ANDERSON; 1 ♀: ibidem, 950 m, berlese forest litter, 15.06.1997, idem.- HT and PTT in FMCh, PTT also in NHMK and in cP.

Macropterous, reddish brown, shoulders and a narrow posterior are of elytra yellowish brown, shiny, punctation microscopically fine and moderately dense (insertions of setae); pubescence dense, erect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.4-1.7 mm (forebody 0.9 mm).

PM of HT: wH: 39.5; dE: 29; IE: 11; IT: 1.5; IG: 5; wP: 39.5; IP: 36; wEl: 59; IEI: 54; IS: 44.

Male: Sternite 4 with a narrow triangular projection at base and a minute impression postero-medially, sternite 5 with a similar basal projection, posterior middle with a narrow and shallow excision, sternite 6 with a distinct impression and a distinct notch postero-medially, sides of the notch projecting ventro-posteriorly, sternite 7 with a deep and narrow median impression and a shallow emargination at posterior margin. Sternite 8 (Fig. 21) very deeply emarginate. Sternite 9 with a distinct apico-median tip. SpP small, half as long and half as broad as the median lobe, double trumpet distinctly sclerotized, vs narrow and long, 1/3 as long as the median lobe. Aedeagus (Fig. 22), apical part of the median lobe spade-like with four minute setae; parameres slightly shorter than the median lobe, bifid, each with two long setae.

In nearly all respects similar to *E. panamensis* n.sp., but minute oblique temples present, base of pronotum with 6 mbf and the mbct3 longer, about half as long as tergite 3.

This new species is closely related to *E. andersoni* PUTHZ (Mexico), but may be distinguished by longer genae, shorter, nearly indistinct temples and the male sexual characters.

Named in honor of Alexander BIERIG (1884-1963), the famous specialist of Staphylinidae from Central America.

#### ***Edaphus kethleyi* n.sp. (Figs. 23-25)**

Holotype (♂): Costa Rica: Cartago: 10 km S Tapanti, Rio Grande de Orosi, 1500 m, 9°42'N, 83°47'W, Berlese concentrated coarse leaf litter on floor, 14.04.1973, J. KETHLEY: in FMCh.

Macropterous, reddish brown, a narrow area at posterior margin of elytra yellowish brown, punctation barely noticeable (insertions of setae); pubescence long and dense, erect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.2-1.5 mm (forebody 0.9 mm).

PM of HT: wH: 43.5; dE: 34; IE: 10; IT: 1.5; IG: 6; wP: 43.5; IP: 41; wEl: 62; IEI: 50; IS: 40.

Male: Sternite 3-7 simple. Sternite 8 (Fig. 24). Sternite 9 with a distinct apico-median tip. SpP 2/3 as long as the median lobe, double trumpet strongly sclerotized, vs (?) consisting of a multiply coiled strongly sclerotized tube (Fig. 23). Aedeagus (Fig. 25) large, median lobe anteriorly with short peg-like setae, apical part with 4 minute setae, internal structures complicated, clasp-like; parameres longer than the median lobe, bifid, each with two long setae.

Head as broad as the elytra, eyes moderately large, with moderately fine ommatidia, temples short but distinct, ptfF semicircular, ampF twice as broad as each of the alpF, flat, impunctate. Antennae with a 2-segmented club, segment 10 distinctly broader than long, about half as long as the last segment. Pronotum broader than long, with 6 minute mbf, distinct lbc absent. Elytra subtrapezoid, shoulders with a minute, nearly indistinct carina, the narrow yellowish brown posterior area very slightly elevated and with the pubescence directed mediad. Mbct3 about 1/3 as long as the posterior tergite.

*Edaphus kethleyi* n.sp. resembles *E. bierigi* n.sp., but may be distinguished by the absence of lbc, longer pubescence and the male sexual characters. The structure, which I regard to be the vesica seminalis is extraordinary in *Edaphus*. More material is required to confirm that it is a true vs.

Named in honour of the collector.

#### ***Edaphus dybasi* n.sp. (Figs. 26-28)**

Holotype (♂) and 2 ♂♂, 2 ♀♀-paratypes: Panama: Chiriqui Prov.: Finca Lerida near Boquete "Casita Alta", 7800 feet, Berlese 524 conc. forest floor litter, 17.03.1959, H.S. DYBAS. Paratypes: 3 ♂♂, 1 ♀: ibidem 7750 feet, Berlese 526, idem; 1 ♂, 1 ♀: ibidem, Berlese 525, conc. forest floor litter under palms etc., idem; 1 ♂: ibidem 6900 feet, Berlese 543, conc. floor debris in dump ravine, 18.03.1959, idem; 1 ♀:



Coclé: El Valle, La Mesa Trail to Las Minas, 2500 feet, Berlese 349, ground debris from steep dry stream bed, 23.02.1959, idem; 1 ♂: Darien: Estacion Ambiental Cana, Cerro Pirre, 1450 m, 7°45.20'N, 77°41.06'W, cloud forest litter, 06.06.1006, R. ANDERSON. Costa Rica: 2 ♂♂: Tapanti, 22.-28.01.1941, A. BIERIG; 1 ♂: Vara Blanca, 2000 m, 08.1938, idem; 1 ♂, 2 ♀♀: Heredia: 6 km ENE Vara Blanca, 10°11'N, 84°07'W, 2000 m, montane forest leaf litter, 15.-22.04.2002, R. ANDERSON; 1 ♀: ibidem 2100 m, idem; 3 ♀♀: Puntarenas: Monte Verde, 1550 m, 10°18'N, 84°42'W, ground litter, 08.04.1909, J. LONGINO; 7 ♂♂, 2 ♀♀: San José/Cartago: km 45 Int. American Hwy 6 km NE El Empalme, 1975 m, 9°45'N, 83°58.30'W, FIT, 08.-26.06.1997, S. & J. PECK.- HT and PTT in FMCh, PTT also in NHMK and in cP.

Macropterous, reddish brown, shiny, punctation microscopically fine (insertions of setae), at 60 x barely noticeable; pubescence dense, semierect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.2-1.6 mm (forebody 0.8 mm).

PM of HT: wH: 37; dE: 27; IE: 11; IT: 0; IG: 4; wP: 37; IP: 35; wEl: 61; IEI: 53; IS: 42.

Male: Antennal segment 10 nearly as long as broad, segment 11 slightly longer than segment 10. Sternites 3-7 simple, sternite 8 (Fig. 27). Sternite 9 with a distinct apicomedian tip. SpP (Fig. 28) consisting of two parts, the proximate part about half as long as the median lobe, double trumpet distinctly sclerotized, the distal part egg-shaped, half as long as the SpP, vs narrow and indistinct, weakly sclerotized. Aedeagus (Fig. 26), median lobe with two ventro-lateral branches, each with one stout and one thin apical seta, apical part with several setae; parameres shorter than the median lobe, shortly bifid, each with two long setae.

Female: Antennal segment 10 distinctly broader than long, segment 11 distinctly longer than segment 10.

In nearly all respects similar to *E. panamensis* n.sp., but the eyes with coarse ommatidia and the base of pronotum with 6-8 more or less distinctly delimited small foveae.

Variability: In some paratypes the frons is finely, distinctly punctate, in other type specimens the punctation is indistinct; in some PTT the elytra are distinctly longer than in the HT (e. g. Cerro Pirre: wEl: IEI = 57:50).

This new species resembles closely *E. mexicanus* PUTHZ and *E. costaricensis* PUTHZ, from which it may be distinguished by longer eyes and the male sexual characters.

Named in honor of the famous collector and specialist of Trichopterygidae Henry S. DYBAS, who guided me, when I visited the FMCh in 1970.

### ***Edaphus gallinaceus* n.sp. (Figs. 29-31)**

Holotype (♂): Costa Rica: San José: km 117 Pan-American Hwy 19 km N San Isidro, 1800 m, 9°28.00'N, 83°42.20'W, FIT, 20.-25.06.1997, S. & J. PECK. Paratypes: San José: 2 ♂♂, 2 ♀♀: Cerro de Escazu, 2 km S San Antonio, 1650 m, 9°53.30'N, 84°09.00'W, berlese forest litter, 13.06.1997, R. ANDERSON. Panama: 1 ♂, 2 ♀♀: Darien: Estacion Ambiental Cana, Cerro Pirre, 1450 m, 7°45.20'N, 77°41.06'W, cloud forest litter, 06.06.1996, R. ANDERSON; 1 ♂, 1 ♀: Chiriqui: 6 km NE Boquete, 1620 m, 8°48'N, 82°26'W, oak forest litter, 14.06.1996, idem; 1 ♂: Chiriqui: 27.7 km W Volcan Hartmann's Finca, 1800 m, 8°45'N, 82°48'W, oak forest litter, 16.06.1996, idem; 1 ♀: Chiriqui: 5.9 km N Cerro Punta, Parque Nacional Volcan Paru, 2400 m, 8°22'N, 82°34'W, bamboo forest litter, 14.06.1996, idem. 1 ♀ (cf. det.): Costa Rica: Puntarenas: OTS Sta. finca las Cruces, 4800 feet: San Vito, 8°46'N, 82°58'W, Berlese leaf litter in stream bed away from flowing water steep banks, Virgin forest cover, 18.03.1973, J. WAGNER & J. KETHLEY (FMCh).- HT and PTT in NHMK, PTT also in cP.

Macropterous, reddish brown, shiny, very finely punctate; pubescence dense, erect on pronotum, semierect on the remaining surface. Antennae, maxillary palpi and legs yellowish.

Length: 1.1-1.3 mm (forebody 0.7-0.8 mm).

PM of HT: wH: 34; dE: 24; IE: 9; IT: 0; IG: 4; wP: 33; IP: 31; dlbc: 22; wEL: 51; IEI: 48; IS: 40.

Male: Sternite 8 (Fig. 31). Sternite 9 with a distinct apico-median tip. SpP 2/3 as long as the median lobe, double trumpet weakly sclerotized, vs long and slender, also weakly sclerotized. Aedeagus (Figs. 29,

30), internal structures of the median lobe which guide the injection tube with narrow triangular acute tufts (which look like a cock's comb when extruded); parameres slightly shorter than median lobe, each with two long setae, the subapical one inserted on a very small protuberance (not a distinct extra-branch).

Head about as broad as the pronotum, eyes large, with moderately coarse ommatidia, distinct temples absent, ptfF distinct, ampF twice as broad as each of the alpF, flat, clypeus simple; punctuation very fine, sparse. Antennae with a 2-segmented club, segment 10 as broad as long, segment 11 about 1.5 x as long as segment 10. Pronotum slightly broader than long, with distinct lbc and 4-6 moderately large mbf; punctuation extremely fine, dense. Elytra subquadrate, slightly broader than long, shoulders with a minute carina; punctuation very fine and very dense. Mbct3 nearly half as long as the posterior tergite 3.

*Edaphus gallinaceus* n.sp. may be distinguished from its relatives by the broad head, large elytra with a short humeral carina, very fine punctuation, the pronotal characters and the male genitalia.

Named after the shape of the extruded structures of the aedeagus, which resemble a cock's comb (Lat. *gallinaceus* = belonging to chickens).

### ***Edaphus wagneri* n.sp. (Figs. 32, 33)**

Holotype (♂) and 1 ♂-paratype: Costa Rica: Puntarenas: OTS Sta. finca Las Cruces, 4000 feet: San Vito, 8°46'N, 82°58'W, Berlese concentrated floor litter on slope above stream-good forest cover, 16.03.1973, J. WAGNER & J. KETHLEY. Paratypes: 1 ♂: ibidem, Berlese banana root litter, West Ravine, 16.03.1973, idem; 1 ♂, 1 ♀: ibidem, Berlese leaf litter in stream bed, away from flowing water steep banks, Virgin forest cover, 18.03.1973, idem; 3 ♂♂ (brachypterous): OTS Sta., 5 km SW finca Las Cruces, 4700 feet: La Fila, Berlese mixed floor litter leaf, palm fibers, logmold, 21.03.1973, idem; 1 ♂: Altamira Biological Station, 1510-1600 m, 9°01.76'N, 83°00.49'W, FIT, 04.-07.06.2004, J. ASHE et al.; 1 ♂: San Rafael-Sabanilla, 09.08.1941, A. BIERIG; 1 ♂: Wilson Botanical Garden (Las Cruces Biol. Sta.), 1200 m, FIT, 27.03.1993, J. & A. ASHE.- HT and PTT in FMCh, PTT also in NHMK and in cP.

Macropterous or brachypterous, reddish brown, pronotum and elytra very finely punctate; pubescence dense, erect on pronotum, semierect on elytra. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.0-1.2 mm (forebody 0.7 mm).

PM of HT: wH: 32.5; dE: 24; IE: 8; IT: 1; IG: 5; wP: 33; IP: 32; wEI: 49; IEI: 43; IS: 38.

Male: Sternite 8 (fig. 32). Sternite 9 with a distinct apico-median tip. SpP as long as the median lobe, double trumpet strongly sclerotized, vs slender, weakly sclerotized, 1/3 as long as the median lobe. Aedeagus (Fig. 33) in principle very close to that of *E. gallinaceus*, but the apical part of the median lobe more slender and the parameres slightly but distinctly bifid.

Macropterous specimens are in most respects similar to *E. gallinaceus*, but the head slightly narrower and without fine punctuation. Pronotum with very long, distinct lbc, feebly depressed postero-laterally, with 4-6 small mbf, punctuation fine (less fine than in *E. gallinaceus*). Elytra very finely punctate.

Variability: 3 paratypes, which were collected at 4700 feet are brachypterous, but their genitalia are identical to those of the macropterous morph.

*Edaphus wagneri* n.sp. may be distinguished from *E. gallinaceus* n.sp. by longer lbc, smooth ampF and the male genitalia.

Named in honor of the collector J. WAGNER.

### ***Edaphus amigo* n.sp. (Figs. 34, 35)**

Holotype (♂) and 1 ♂, 3 ♀♀-paratypes: Costa Rica: Puntarenas-Guanacaste border: Monte Verde, Cerro Amigos, 1780 m, Berlese, sifted leaf litter, 09.05.1989, J. ASHE, R. BROOKS & R. LESCHEN (Snow Ent. Mus. C. R. Exped. # 89). Paratypes: 1 ♀ (abdomen missing): Monteverde, 1570 m, FIT, 15.05.1989, idem; 1 ♂: Guanacaste: 8 km NE Sta. Elena, Santa Elena Forest Reserve, 10°20.701'N, 84°47.899'W, FIT, 11.-17.06.2001, S. & J. PECK. 1 ♀ (cf. det.): Heredia: Las Vueltas, upper Rio Patria SE slope Volcan Barba, 1900 m, 84°05'N, 10°06'W, conc. mixed floor litter, 01.04.1973, J. WAGNER & J. KETHLEY (FMCh).- HT and PTT in NHMK, 1 PT in cP.

This new species is in nearly all respects similar to *E. dybasi* n.sp., but the male genitalia are distinctive.

Length: 1.3-1.5 mm (forebody 0.85-0.9 mm).

PM of HT: wH: 37.5; dE: 27; IE: 12; IT: 0; IG: 5; wP: 38; IP: 36; wEl: 63; lEl: 57; IS: 48.

Male: Sternite 8 (Fig. 35). Sternite 9 and two-part SpP about as in *E. dybasi*. Aedeagus (Fig. 34) different: the ventro-lateral parts of the median lobe longer, internal structures different; parameres about as long as ventro-lateral parts of the median lobe, shortly bifid.

A reliable identification of *Edaphus amigo* n.sp. is possible only based on a study of the aedeagus.

Named after the type locality.

#### ***Edaphus andersonianus* n.sp. (Figs. 36, 37)**

Holotype (♂) and 2 ♂♂, 5 ♀♀-paratypes: Panama: Darien: Estacion Ambiental Cana, Cerro Pirre, 1450 m, 7°45.20'N, 77°41.06'W, cloud forest litter, 06.06.1006, R. ANDERSON. Paratypes: 1 ♂: Coclé: 1 Valle, La Mesa Trail to Las Minas, 2500 feet, ground debris from steep dry stream bed, 23.02.1959, H. S. DYBAS; 2 ♂♂. Costa Rica: Puntarenas: 11 km SW Est. Biol. Las Cruces, 1450 m, 8°46.43'N, 83°01.50'W, wet cloud forest litter, 09.07.1999, R. ANDERSON.- HT and PTT in NHMK, PTT also in FMCh and in cP.

General description: same as in *E. gallinaceus* n.sp.

Length: 1.2-1.4 mm (forebody 0.8 mm).

PM of HT: wH: 34; dE: 24; IE: 10; IT: 0; IG: 4; wP: 35; IP: 31; dlbc: 24; wEl: 58; lEl: 52; IS: 45.

Male: Sternite 8 (Fig. 36). Sternite 9 with a distinct apico-median tip. SpP consisting of two parts (about as in Fig. 28), proximal part 3/4 as long as the median lobe, double trumpet distinctly sclerotized, distal part oval, slightly less than half as long as the median lobe, vs weakly sclerotized, narrow, inconspicuous. Aedeagus (Fig. 37), ventral lobe of median lobe with two apical setae, shorter than the parameres; internal structures with a short, strongly sclerotized injection tube, acute tufts as in *E. gallinaceus* absent; parameres longer than the ventral lobes of the median lobe, with a small setiferous protuberance in about anterior third, apical seta shorter than subapical seta.

In nearly all respects similar to *E. gallinaceus*, but humeral angles unmodified.

*Edaphus andersonianus* n.sp. may be distinguished from *E. gallinaceus* n.sp. and *E. wagneri* n.sp. by simple shoulders and the male genitalia.

Named after R. ANDERSON, the successful collector of neotropical *Edaphus*.

#### ***Edaphus dybasianus* n.sp. (Figs. 38, 39, 41)**

Holotype (♂) and 1 ♀-paratype: Panama: Chiriqui: Cerro Punta, 7000 feet, Berlese floor debris on steep wooded slope, 07.03.1959, H.S. DYBAS. Paratypes: 2 ♀: Finca Lerida near Boquete "Casita Alta", 6900 feet, Berlese 543: conc. floor debris in damp ravine, 17.03.1959, idem; 3 ♂♂, 2 ♀♀: Chiriqui: 12 km NE Santa Clara, Cerro Pando, 2000 m, 8°54.44'N, 82°43.30'W, cloud forest litter, 17.06.1996, R. ANDERSON; 1 ♂, 2 ♀♀: 5.9 km N Cerro Punta, Parque Nac. Volcan Baru, 2150 m, 8°22'N, 82°34'W, alder forest litter, 14.06.1995, idem; 1 ♀: 6.7 km N Cerro Punta, Parque Nac. La Amistad, Las Nubes, 2150 m, 8°22'N, 82°34'W, berlese forest litter, 15.06.1995, idem; 1 ♂: 20 km N Gualaca, Finca La Suiza, 1450 m, 8°39'N, 82°12'W, oak forest litter, 12.06.1995, idem. Costa Rica: 1 ♂: Cartago: Sendero a Cerro Chirripo, Llano Bonito, 2450 m, 9°27.16'N, 83°32.22'W, cloud forest litter, 27.06.1999, idem; 1 ♀: ibidem 2800 m, 9°26.47'N, 83°32.12'W, mixed oak forest litter, 27.06.1999, idem; 1 ♀: Guanacaste: Guanacaste Conservacion Area, Patilla Field Station, 1000 m, cloud-wet montane forest trans. litter, 14.02.1996, idem.- HT and PTT in FMCh, PTT also in NHMK and in cP.

Brachypterous, castaneous, shiny, very finely, densely punctate; pubescence dense, semierect on forebody. Antennae, maxillary palpi and legs light brown.

Length: 1.2-1.4 mm (forebody 0.7 mm).

PM of HT: wH: 36; dE: 28; IE: 8; IT: 1.5; IG: 5; wP: 35; IP: 33; wEl: 50; lEl: 35; IS: 25.

Male: Sternite 8 with a very broad apical emargination (about as in Fig. 35). Sternite 9 with a prominent apico-median tip. SpP (Fig. 38) broad, 2/3 as long as the aedeagus, double trumpet distinctly sclerotized, vs spindle like, nearly half as long as the median lobe. Aedeagus (Fig. 41), apical part of median lobe triangular with 2 (?) minute setae; parameres slightly shorter than median lobe, shortly bifid,

each with two long setae.

Head slightly broader than pronotum, eyes with moderately coarse ommatidia, prominent, temples short, oblique, distinct, pttF distinct, ampF nearly twice as broad as the indistinctly delimited alpF, flat; punctation absent. Antennae with 2-segmented club, segment 10 about as long as broad (♂) or slightly broader than long (♀), segment 11 distinctly longer than segment 10. Pronotum broader than long, strongly constricted behind, with 4 (-6) small mbf, lbc and mbc absent; punctation very fine, dense. Elytra strongly trapezoid, humeral angles unmodified, punctation very fine, dense. Mbct3 absent.

This new species resembles closely *E. david* n.sp., *E. eliab* n.sp. and *E. cimicoides* PUTHZ, from which it may be distinguished by the broader head, impunctate frons and the male sexual characters.

Named in honor of the late Henry S. DYBAS, collector of the holotype.

#### ***Edaphus wagnerianus* n.sp. (Figs. 42, 43)**

Holotype (♂) and 2 ♀♀-paratypes: Costa Rica: Cartago: 10 km S Tapanti, Rio Grande de Orosi, 1500 m, 9°42'N, 83°47'W, Berlese concentrated coarse leaf litter on floor, 14.04.1973, J. WAGNER & J. KETHLEY. 3 ♀♀ (cf. det.): San José: La Hondura, Rio Claro, 1150 m, 10°03'N, 83°58'W, Berlese stream bed leaf litter, 05.04.1973, idem (FMCh); 4 ♀♀ (cf. det.): Panama: Chiriqui: La Fortuna, 1200 m, Continental Divide Trail, 8°48'N, 82°12'W, berlese forest litter, 09.06.1995, R. ANDERSON (NHMK and cP).- HT and 1 PT in FMCh, 1 PT in cP.

Brachypterous, reddish brown, shiny, extremely finely punctate; pubescence dense, semierect on pronotum, semirecumbent on elytra. Antennae, maxillary palpi and legs yellowish.

Length: 1.0-1.2 mm (forebody 0.7 mm).

PM of HT: wH: 33.5; dE: 25; IT: 1; IG: 5; wP: 33; IP: 32; dlbc: 24; wEl: 49 (♀: 46); lEl: 40 (♀: 36); lS: 32.

Male: Sternite 8 (Fig. 43). Sternite 9 with a distinct apico-median tip. SpP consisting of two parts, the proximate part about as long and as broad as the median lobe, double trumpet strongly sclerotized, the distal part slender-oval, vs narrow, nearly as long as the median lobe, weakly sclerotized. Aedeagus (Fig. 42), parameres distinctly shorter than the median lobe, shortly bifid, each with two moderately long setae.

In nearly all respects similar to *E. dybasianus* n.sp., but pttF angulate (semicircular in *E. dybasianus*), ampF very finely punctate. Elytra less trapezoid (in the female distinctly shorter than in the male), shoulders slightly but distinctly prominent with a minute carina.

Named after one of its collectors.

#### ***Edaphus subtilipunctatus* n.sp. (Figs. 40, 45, 46)**

Holotype (♂) and 2 ♂♂, 1 ♀-paratypes: Venezuela: Aragua: Rancho Grande Biological Station, 1350 m, 10°21'N, 67°41'W, berlese leaf litter, 28.02.1995, R.W. BROOKS. Paratypes: 3 ♂♂, 2 ♀♀ ibidem, 1450 m, "La Cumbre", 28.02.1995, idem; 2 ♂♂, 3 ♀♀: ibidem, 1390-1420 m, 27.02.1995, idem; 2 ♂♂: ibidem, 1150 m, montane forest litter, 12.05.1995, R. ANDERSON; 1 ♂: Rancho Grande, sendero a la Toma de Agua, 3850 feet, litter near stream, 22.03.1992, L. HERMAN; 1 ♂, 2 ♀♀: Maracay, Rancho Grande, 1200 m, cloud forest, FIT, 1.-10.07.1987, BORDON & PECK; 2 ♂, 1 ♀: Rancho Grance, La Cumbre, 1500 m, Neurolepis pittieri-bamboo litter, 9.08.1987, S. & J. PECK.- HT and PTT in NHMK, PTT also in AMNH, MHNG and in cP.

Macropterous, reddish brown, shiny, pronotum and elytra very finely, densely, distinctly punctate; pubescence dense, erect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish.

Length: 1.1-1.4 mm (forebody 0.80-0.85 mm).

PM of HT: wH: 35; dE: 25; lE: 9; IT: 0; IG: 5; wP: 35; IP: 33; wEl: 55 (♀: 50); lEl: 48 (♀: 39); lS: 39.

Male: Sternite 8 (Fig. 46). Sternite 9 with a long prominent apico-median tip. SpP consisting of two parts (Fig. 40), the proximal part nearly as long as the median lobe, double trumpet strongly sclerotized, vs strongly sclerotized, suboval, about half as long as the median lobe. Aedeagus (Fig. 45), median lobe with a triangular apical part, which has 4 minute setae; parameres simple, as long as the median lobe, each

with two long apical setae.

Head as broad as pronotum, eyes large, with fine ommatidia, temples absent, ptff distinct, semicircular, ampF 1.5 x as broad as each of the alpF, flat, clypeus simple; punctuation very fine, sparse. Antennae with 2-segmented club, segment 10 about as long as broad, segment 11 1.5 x as long as segment 10. Pronotum slightly broader than long, strongly constricted behind, with 6 small mbf, lbc and mbc absent; punctuation very fine, dense. Elytra distinctly broader than long (in the female distinctly shorter than in the male), shoulders prominent, simple; punctuation very fine and dense. Mbct3 absent.

*Edaphus subtilipunctatus* n.sp. resembles closely *E. dybasianus* n.sp. and *E. wagnerianus* n.sp.; from the former it may be distinguished by macroptery and the absence of distinct temples, from the latter by the semicircular ptff and the recumbent elytral pubescence, from both by the male sexual characters.

Named after the very fine punctuation (Lat. *subtilis* = fine; *punctatus* = punctate).

#### ***Edaphus siphonifer* n.sp. (Figs. 44, 47)**

Holotype (♂) and 1 ♂-paratype: French Guyana: Roura, 39.4 km SSE, 270 m, 4°32.43'N, 52°08.26'W, FIT, 25.-29.05.1997, J. ASHE & R. BROOKS. Paratypes: 1 ♂, 1 ♀: 18.4 km SSE Roura, 240 m, 4°36.38'N, 52°13.25'W, FIT, 25.-29.05.1997, idem; 5 ♂♂, 3 ♀♀: ibidem, FIT, 29.05.-10.06.1997, idem; 1 ♂, 1 ♀: Cayenne: 33.5 km S and 8.4 km NW of Hwy N2 on Hwy D5, 30 m, 4°48.18'N, 52°28.41'W, FIT, 29.05.-09.06.1997, idem; 3 ♂♂: Matoury: 41.5 km SSW on Hwy N2, 50 m, 4°37.22'N, 52°22.35'W, FIT, 26.-18.05.1997, idem; 1 ♂: Saül: Mt. Galbao summit, 740 m, 3°37.18'N, 53°16.42'W, FIT, 05.-07.06.1997, idem. Peru: 1 ♂: Madre de Dios: Pantiacolla Lodge, 2-7 km NW El Mirador Trail, Alto Madre de Dios River, 450-700 m, 12°39.10'S, 71°15.28'W, FIT, 23.-26.10.2000, R. BROOKS; 1 ♂: Loreto: Campamento San Jacinto, 2°18.75'S, 75°51.77'W, 175-215 m, 3.07.1997, R. LESCHEN; 2 ♂♂: Loreto: Teniente Lopez, 2°35.66'S, 76°06.92'W, 210-240 m, FIT, 23. & 28.07.1993, idem; 1 ♂: Ucayali Dept.: Tingo Maria-Pucallpa Road, Puente Chino, km 205, 1300 m, 9°8.12'S, 75°47.20'W, FIT, 11.-14.10.1999, R. ANDERSON.- HT and PTT in NHMK, PTT also in cP.

Macropterous, light brown, shiny, very finely, densely punctate; pubescence dense, erect on pronotum, semierect on elytra. Antennae, maxillary palpi and legs yellowish.

Length: 1.1-1.3 mm (forebody 0.7-0.8 mm).

PM of HT: wH: 32; dE: 21; lE: 10.5; lT: 0; lG: 3; wP: 32; lP: 29; dlbc: 22; wEl: 54; lEl: 44; lS: 37.

Male: Sternite 8 (Fig. 47). Sternite 9 with a distinct apico-median tip. SpP about 3/4 as long as the median lobe, double trumpet distinctly sclerotized, vs weakly sclerotized, narrow, less than 1/5 as long as the median lobe. Aedeagus (Fig. 44) with a slender median lobe, which has a long, proximately more distinctly sclerotized extruding tube ("siphon"); parameres simple, much shorter than the median lobe, each with two moderately long setae.

Head as broad as pronotum, eyes very large, with moderately fine ommatidia, temples absent, ptff deep, ampF nearly twice as broad as each of the alpF, flat, impunctate, clypeus simple. Antennae with 2-segmented club, segment 10 slightly broader than long, segment 11 1.5 x as long as segment 10. Pronotum distinctly broader than long, with distinct lbc (4-) 6 mbf and a narrow fold between the medial mbf (which is not a complete mbc and does not extend to base); punctuation extremely fine, dense. Elytra subquadrate, distinctly broader than long, humeral angles unmodified; punctuation very fine, dense. Mbct3 half as long as the posterior tergite.

Variability: The PT from Peru has only 4 mbf and the pronotum is nearly impunctate, but the genitalia are identical.

*Edaphus siphonifer* n.sp. may be distinguished from its relatives by the large eyes, the medio-basal fold of the pronotum and the male sexual characters.

Named after the long internal tube of the median lobe.

#### ***Edaphus newtoni* n.sp. (Figs. 48, 50)**

Holotype (♂): Panama: Canal Zone, Barro Colorado Island, litter under old tree and vine fall, 12.02.1976, A. NEWTON. Paratypes: 1 ♂: ibidem, litter under rotting logs, 13.02.1976, idem; 1 ♂: ibidem, 06.02.1976, idem; 1 ♂: Veraguas, 6.1 km N of Santa Fé, Cerro Tute, 1220 m, 8°30.30'N, 81°07.06'W,

cloud forest litter, 13.06.1996, R. ANDERSON.- HT and 1 PT in FMCh, 1 PT in NHMK and 1 PT in cP.

Macropterous, reddish brown, shiny, at 60 x impunctate (insertions of setae barely noticeable); pubescence dense, semierect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish.

Length: 0.8-1.1 mm (forebody 0.55-0.6 mm).

PM of HT: wH: 23.5; dE: 16; IE: 7; IT: 0; IG: 2; wP: 27; IP: 24; dIbc: 19; wEl: 40; lEl: 35; IS: 28.

Male: Sternite 8 (Fig. 50). Sternite 9 with a minute projecting apico-median tip. SpP about twice as long as the median lobe, double trumpet indistinct, vs small, 1/5 as long as the median lobe. Aedeagus (Fig. 48), median lobe triangularly narrowed; parameres simple, shorter than median lobe, each with two short apical setae.

Head distinctly narrower than pronotum, eyes with moderately coarse ommatidia, much longer than genae, temples absent, ptfF distinct, ampF about as broad as each of the strongly elevated alpF, deeply concave, clypeus somewhat delimited from ampF; punctation absent. Antennae with 2-segmented club, segment 10 distinctly broader than long, half as long as segment 11. Pronotum distinctly broader than long, strongly constricted behind, with distinct lbc, mbc and 4 comparatively large (+ 1 or 2 minute foveae near lbc) mbf. Elytra distinctly broader than long, humeral angles unmodified. Mbct3 nearly as long as the posterior tergite.

This new species seems to be the sister species of *E. plaumanni* PUTHZ (which was described from Brazil, Sta Catharina, but has been also found in Cuba: 1 ♂: Yaya, Oriente, VII.1941, JAUME (ex coll. A. BIERIG) (FMCh) It may be distinguished from this species by the more triangular ampF, which is more distinctly delimited laterally and anteriorly, and by the narrower aedeagus with shorter parameres.

This minute new species is dedicated to Dr. Alfred F. NEWTON (Chicago), the distinguished staphylinidologist, who collected the holotype.

### ***Edaphus cinche* n.sp. (Figs. 49, 56)**

Holotype (♂): Peru: Ucayali Dept.: Tingo Maria-Pucallpa Road Puente Chino km 205, 1300 m, 9°08.12'S, 75°47.20'W, FIT, 11.-14.10.1999, R. BROOKS: in NHMK.

Macropterous, reddish brown, shiny, very finely, densely punctate; pubescence dense, erect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish brown.

Length: 1.0-1.2 mm (forebody 0.7 mm).

PM of HT: wH: 30.5; dE: 22; IE: 8.5; IT: 0; IG: 4; wP: 30; IP: 30; wEl: 47; lEl: 46; IS: 38.

Male: Sternite 8 (Fig. 56). Sternite 9 with a short apico-median projection. SpP about as long as the median lobe, double trumpet distinctly sclerotized, vs not found. Aedeagus (Fig. 49) stout, median lobe with two short apical setae; parameres very broad, each with two strong setae.

Head about as broad as pronotum, eyes moderately large, with fine ommatidia, distinct temples absent, ptfF distinct, angulate, ampF less than twice as broad as each of the alpF, flat, clypeus simple; punctation very fine, distinct. Antennae with a 2-segmented club, segment 10 nearly as long as broad, segment 11 1.5 x as long as segment 10. Pronotum about as long as broad, strongly constricted behind, with 4 moderately large mbf; distinct lbc absent (note: inspection has to be made using illumination from different angles); punctation very fine, dense. Elytra subquadrate, humeral angles unmodified, punctation indistinct (microscopically fine insertions of setae). Mbct3 half as long as the posterior tergite.

This new species resembles several neotropical *Edaphus* with a broad head, it may be distinguished from *E. irenae* PUTHZ (Panama) by the less distinctly, more finely punctate pronotum and the punctate frons, from *E. panamensis* n.sp. by smaller size and punctate frons, from both (and all other *Edaphus*) by the male sexual characters.

The name is the Inka word for a leader of a noble family.

### ***Edaphus villac* n.sp. (Figs. 51, 52)**

Holotype (♂) and 1 ♀-paratype: Ecuador: Napo: El Chaco, 4.8 km NW on road to Oyacachi, 1750 m, 0°18.22'S, 77°50.38'W, montane evergreen forest litter, 7.11.1999, R. ANDERSON. Paratypes: 1 ♀: Sucumbios: Sacha Lodge, 0°05'S, 76°05'W, malaise trap, 13.-25.07.1994, HIBBS; 1 ♂: Peru: Ucayali

Dept.: Tingo Maria-Pucallpa Road Puente Chino, km 205, 1300 m, 9°08.12'S, 75°47.20'W, FIT, 11.-14.10.1999, R. ANDERSON.- HT and 1 PT in NHMK, 1 PT in cP.

Macropterous, reddish brown, shiny, punctation indistinct, microscopically fine (insertions of setae); pubescence dense, semierect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs yellowish.

Length: 1.0-1.4 mm (forebody 0.7-0.8 mm).

PM of HT: wH: 34; dE: 25; IE: 9; IT: 0; IG: 4; wP: 36; IP: 33; wEl: 56; IEI: 49; IS: 39.

Male: Sternite 8 (Fig. 51). Sternite 9 with a long apico-median tip. SpP as long as the median lobe, double trumpet distinctly sclerotized, vs ? . Aedeagus (Fig. 52), median lobe with a broadly rounded dorsal lobe and a bifid ventral part, each branch with a short subapical seta medially; parameres deeply split into two branches, the external branch longer than the internal one, each with a very strong and long apical seta.

In nearly all respects similar to *E. cinche* n.sp., but slightly longer, pronotum broader with 4-6 mbf, punctation even finer, at 60 x indistinct.

This new species also strongly resembles *E. panamensis* n.sp., from which it may be distinguished by the narrower head and the male sexual characters.

The name is the Inka word for priest.

#### ***Edaphus bolivianus* n.sp. (Figs. 53, 54)**

Holotype (♂) and 3 ♂♂, 2 ♀♀-paratypes: Bolivia: Santa Cruz: Mirana, 16.0 km NE Yungas de Mirana, 2300 m, 18°03.35'S, 63°54.38'W, litter, 29.01.1999, R. ANDERSON. Paratypes: 1 ♀: La Paz: Coroico, Cerro Uchumachi, 2150 m, 16°12.16'S, 67°43.33'W, 2nd growth cloud forest litter, idem.- HT and PTT in NHMK, 2 PTT in cP.

General description as in *E. villac* n.sp.

Length: 1.2-1.5 mm (forebody 0.8-0.85 mm).

PM of HT: wH: 38.5; dE: 28; IE: 9.5; IT: 1; IG: 5; wP: 40; IP: 36; wEl: 61; IEI: 58; IS: 45.

Male: Sternite 8 (Fig. 54). Sternite 9 with a distinctly prominent apico-median tip. SpP twofold, proximate part 2/5 as long as the median lobe, double trumpet distinctly sclerotized, distal part weakly sclerotized, narrow, slightly shorter than the proximal part, vs weakly sclerotized, very narrow, nearly half as long as the median lobe. Aedeagus (Fig. 53) large, median lobe with an anteriorly broadly rounded dorsal lobe which has four minute setae; parameres bifid, shorter than the median lobe, each with 2 long setae.

In nearly all respects very similar to *E. villac* n.sp. and to *E. chinche* n.sp., but the pronotum with more or less distinct lbc: at first glance the lbc seem to be distinctly pronounced, inspection and illumination from different angles shows that there are no true, sharp, elevated carinae, but sharp folds which have a striking resemblance to carinae. *E. bolivianus* n.sp. may be distinguished from both species by these characters, as well as by the minute temples, from the second also by the 6 mbf, from all by the male genitalia.

Named after the country where the type localities are situated.

#### ***Edaphus similifactus* n.sp. (Figs. 55, 57)**

Holotype (♂) and 2 ♀♀-paratypes: Bolivia: La Paz: 9 km E Chulumani, Apa-Apa, 2100 m, 16°20.99'S, 67°30.30'W, lower yungas litter, 21.01.2001, R. ANDERSON; 1 ♀- 9.1 km E of Chulumani, 2100-2400 m, 16°20.59'S, 67°30.18'W, FIT, 17.-19.01.2001, J.S. ASHE & R.S. HANNLEY. HT and PTT, 1 PT in cP.

In nearly all respects similar to *E. bolivianus* but the very fine punctation slightly more distinct. The male genitalia also very similar.

Length: 1.3-1.7 mm (forebody 0.9 mm).

PM of HT and PT: wH: 38.5 (38); dE: 28.5; IE: 10; IT: 1.5; IG: 6; wP: 38.5 (39); IP: 39 (38); wEl: 60 (60); IEI: 55 (50); IS: 45.

Male: Sternite 8 (Fig. 55). Sternite 9 with a distinctly prominent apico-median tip. SpP and vs as in

*E. bolivianus*. Aedeagus (Fig. 57), ventro-lateral lobes of the anterior median lobe shorter than in *E. bolivianus*, dorsal lobe more triangular with four minute setae; parameres bifid, internal branch deeper separate from the external branch than in *E. bolivianus*.

The name refers to the similarity of the new species to *E. bolivianus* (Lat. *similifactus* = made similar).

#### ***Edaphus limbipennis* n.sp.**

Holotype (♂): Ecuador: Carchi: San Gabriel, approx. 15 km E R.B. Guandera, 3300 m, 0°35.11'N, 77°34.37'W, mixed riparian forest litter, 11.11.1999, R. ANDERSON: in NHMK.

Apterous, dark brown, shiny, head impunctate, pronotum and elytra finely, moderately densely punctate, abdomen finely, densely punctate; pubescence moderately dense, semierect on pronotum, recumbent on the remaining surface. Antennae, maxillary palpi and legs brownish.

Length: 2.2-2.5 mm (forebody 1.1 mm).

PM of HT: wH: 48; dE: 39; lE: 10; lT: 5; lG: 8; wP: 66; lP: 57; wEl: 88; lEl: 50; lS: 35.

Male: Sternite 7 with a broad apical emargination. Sternite 8 with a deep apical emargination nearly in apical half. Sternite 9 with a prominent apico-median tip. SpP long and narrow, slightly longer than twice as long as the median lobe, spindle-shaped with an internal distinctly sclerotized spiral, double trumpet absent, vs small, strongly sclerotized. Aedeagus large, median lobe with a triangular apical part; parameres much shorter than the median lobe, each with 2 long apical setae, the internal one thin, the external one very stout.

Head very small, much narrower than pronotum, eyes small with coarse ommatidia, temples prominent, genae nearly as long as eyes; ptFF distinct, ampF slightly broader than each of the strongly elevated alpF, concave and impunctate, clypeus simple. Antennae with 3-segmented club, segment 10 about 1.5 x as long and as broad as segment 9, segment 11 nearly twice as long as segment 10. Pronotum distinctly broader than long, moderately constricted behind, lateral margin narrowly prominent in posterior half, visible only in dorsal aspect; base with 4-6 mbf, lbc and mbc absent; punctation fine and dense. Elytra strongly trapezoid, sides rounded with an elevated narrow border and numerous fine granules nearby; punctation fine varying from sparse (near suture) to moderately dense (in lateral half). Mbct3 absent but tergite 3 with a shallow median impression basally.

This new species is separated from all its relatives by the distinctive elytral border.

The name refers to the distinctive elytral morphology of the species (Lat. *limbipennis* = with bordered elytra).

#### ***Edaphus chinan* n.sp.**

Holotype (♀): Ecuador: Pichincha: Bellavista Reserve, Ridge Trail 12 km S Nanegalito, 2250 m, 0°0.54'S, 78°40.56'W, cloud forest litter, 28.10.1999, R. ANDERSON: in NHMK.

Brachypterous, reddish brown, moderately shiny, very finely and densely punctate; pubescence dense, erect on pronotum, recumbent and very long on the remaining surface. Antennae, maxillary palpi and legs reddish brown.

Length: 1.5-1.7 mm (forebody 0.8 mm).

PM of HT: wH: 38; dE: 29; lE: 10; lT: 0; lG: 6; wP: 48; lP: 40; wEl: 72; lEl: 45; lS: 34.

Male: unknown.

Head much narrower than elytra, eyes with coarse ommatidia, moderately small, temples absent, ptFF distinct, ampF as broad as each of the strongly elevated alpF, concave, impunctate, clypeus simple. Antennae with 2-segmented club, segment 10 about as broad as long, segment 11 about 1.5 x as long as segment 10. Pronotum distinctly broader than long, strongly constricted behind, with 2 large transverse mbf, lbc and mbc absent; punctation very fine, dense. Elytra strongly trapezoid, much broader than long, with a deep transverse humeral and a circular parascutellar impression; punctation very fine and very dense. Mbct3 absent.

This new species is easily distinguished from other brachypterous species by the peculiar basal impression of the elytra.

The name refers to an Inka word for a maid.



### Acknowledgments

For the loan of material from collections under their care I am indebted to all colleagues involved. For taking REM- and habitus-photographs I thank very much Prof. Dr. Oliver Betz and Karl-Heinz Hellmer (University of Tübingen) and Monsieur Marc Tronquet (Molitg-les-Bains).

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### Supplementary note

#### *Edaphus asheianus* nom. nov.

*Edaphus ashei* PUTHZ, 2006: 79 f. (nec PUTHZ, 1971)

Through a regrettable lapsus the species name *ashei* has been published twice: 2001 in Dugesiana 8: 25 (Three new *Edaphus*-species from Mexico (Coleoptera: Staphylinidae), Dugesiana 8: 23-27) and 2006. *E. ashei* PUTHZ, 2006 therefore is a junior homonym of *E. asheianus* nom. nov.

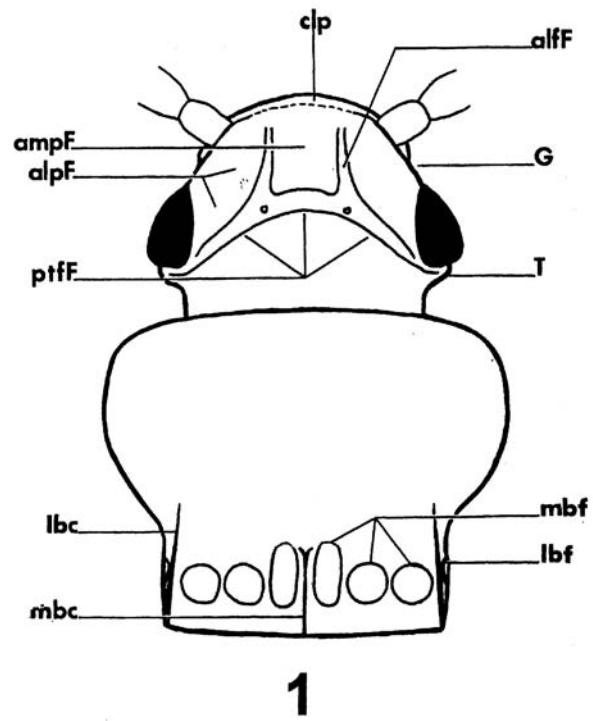
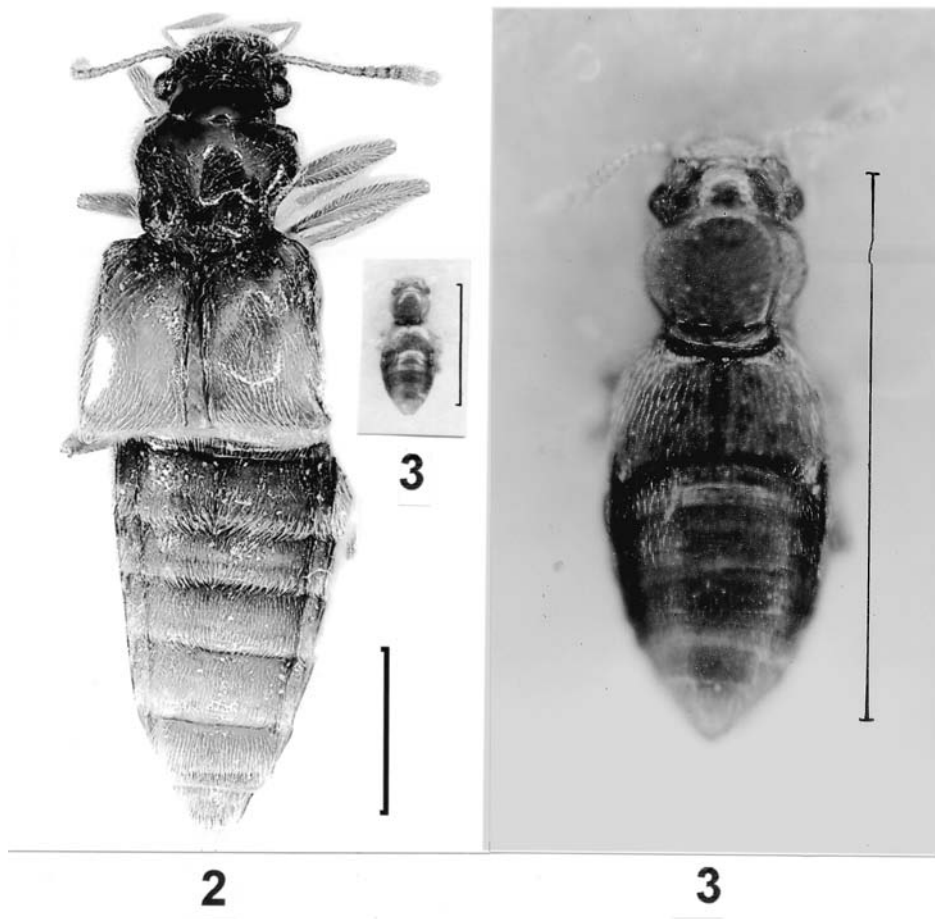
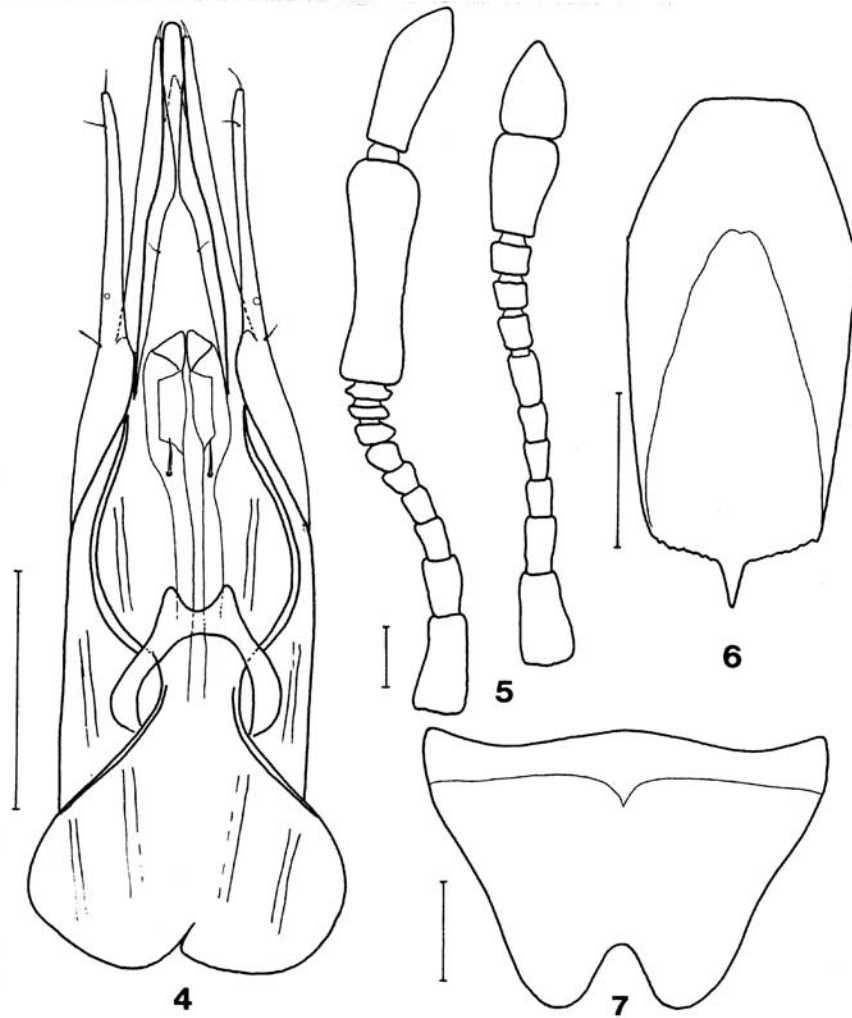


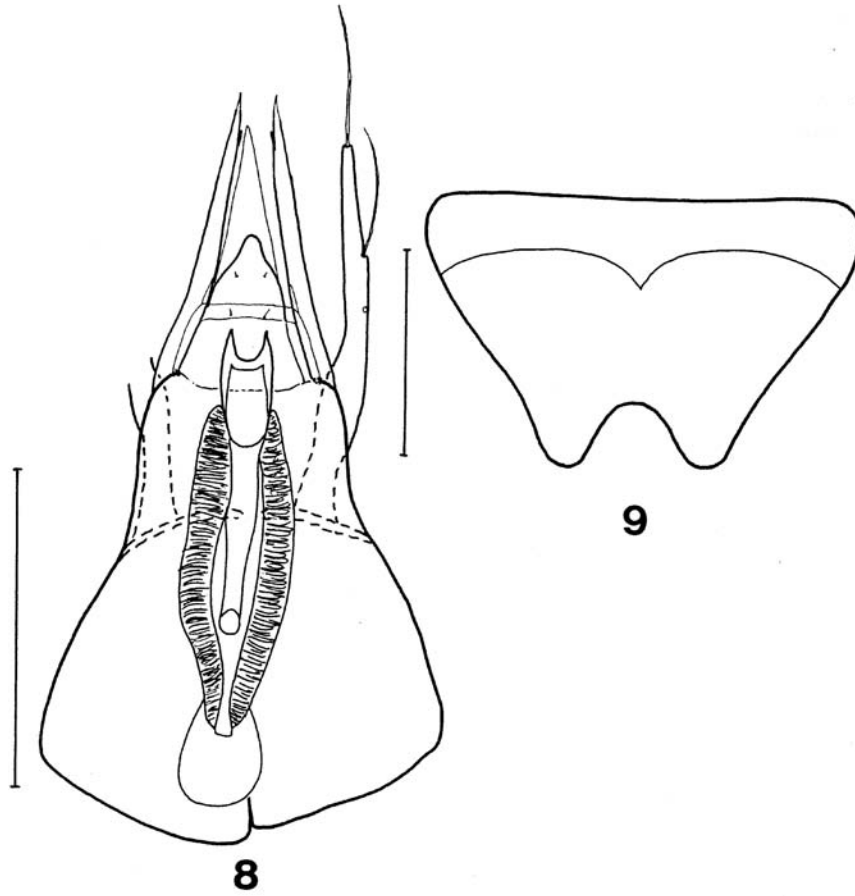
Fig. 1:  
Head and pronotum of *Edaphus* spec., explanation of abbreviations see introduction.



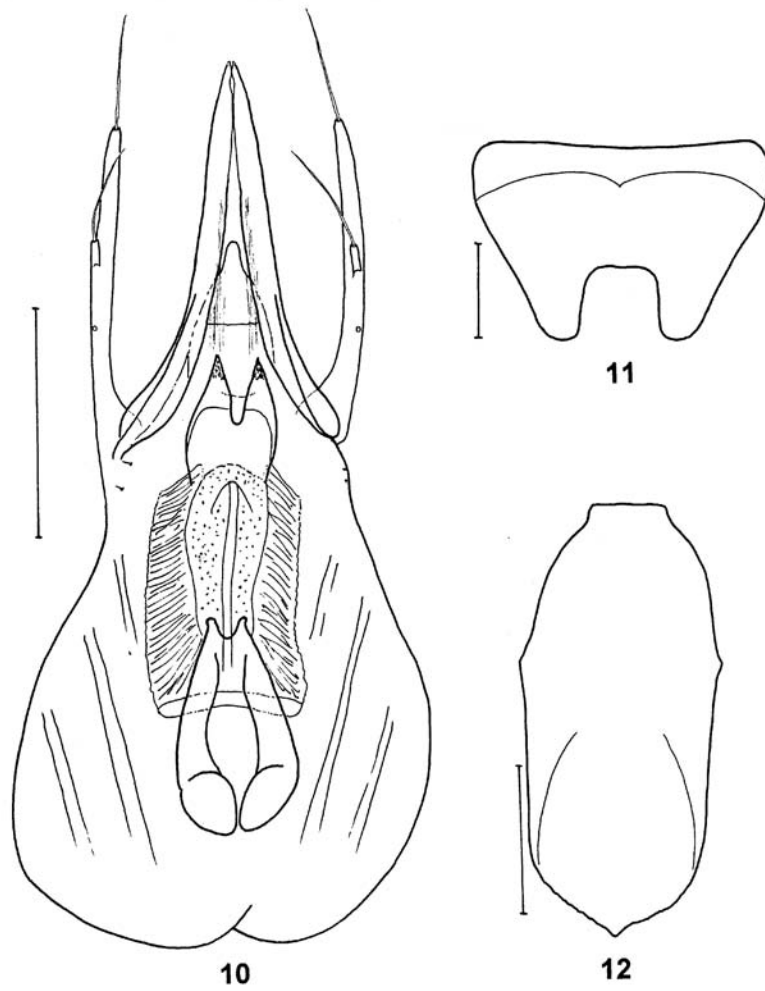
Figs. 2 & 3:  
Habitus of *Edaphus goliath* n.sp. (2, PT) and *E. david* n.sp. (3, PT).- Scale bar = 0.1 mm.



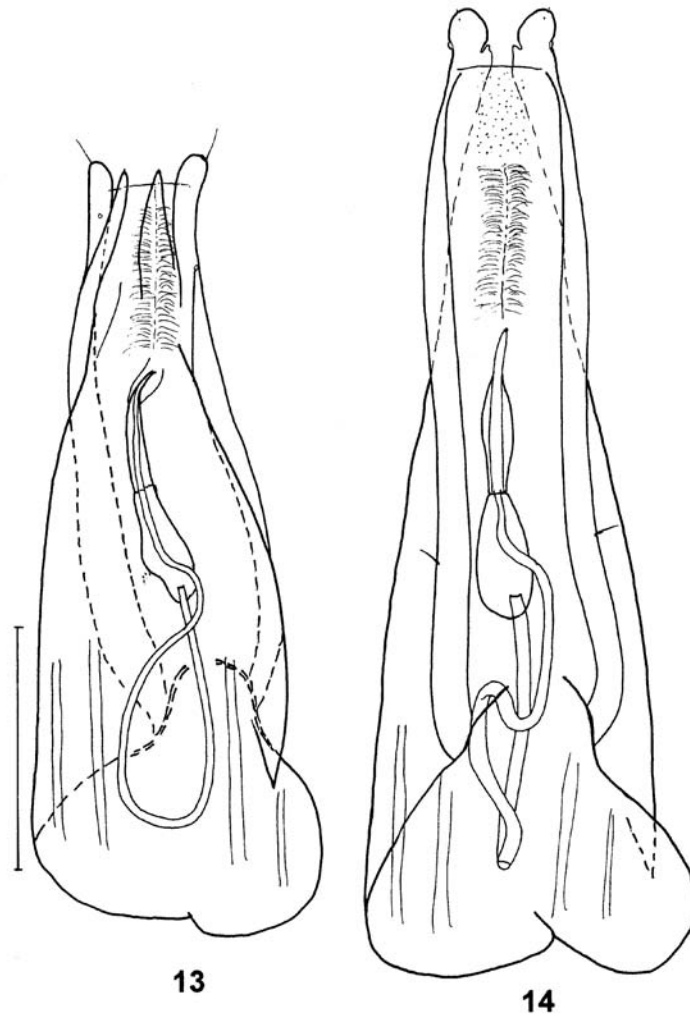
Figs. 4-7:  
*Edaphus goliath* n.sp. (PTT): 4: ventral aspect of aedeagus. 5: antenna of the male (left) and the female (right). 6: sternite 9 of male. 7: sternite 8 of male.- Scale bar = 0.1 mm.



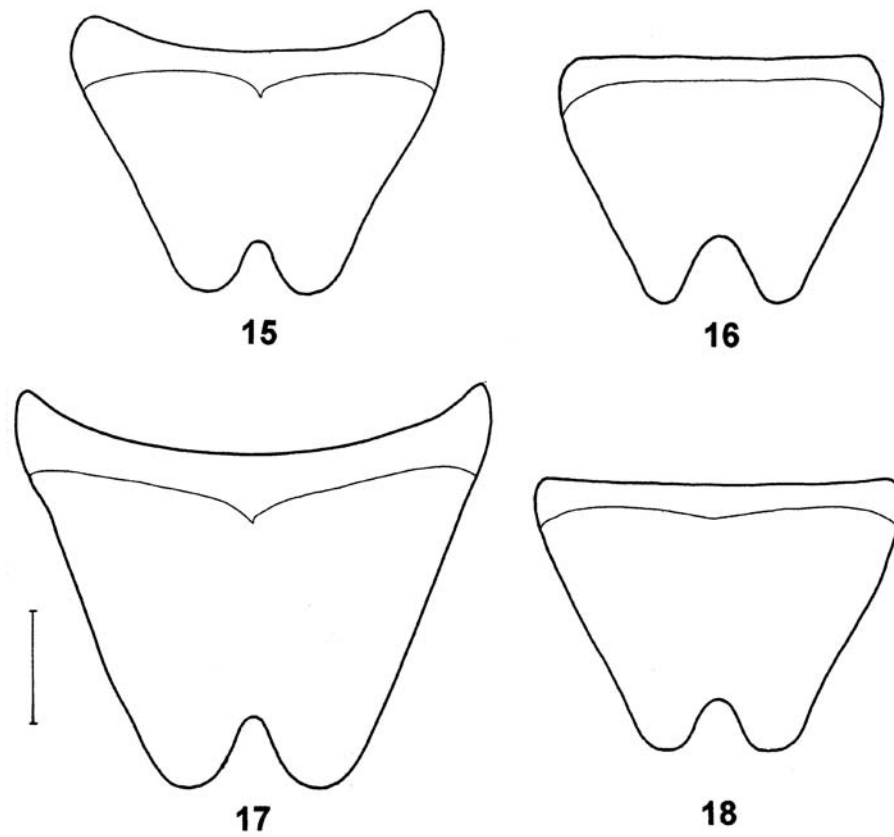
Figs. 8 & 9:  
*Edaphus david* n.sp. (HT): Ventral aspect of aedeagus (8) and sternite 8 of male (9).- Scale bar = 0.1 mm.



Figs. 10-12:  
*Edaphus eliab* n.sp. (PT): ventral aspect of aedeagus (10), sternite 8 (11) and 9 (12) of male.- Scale bar = 0.1 mm.

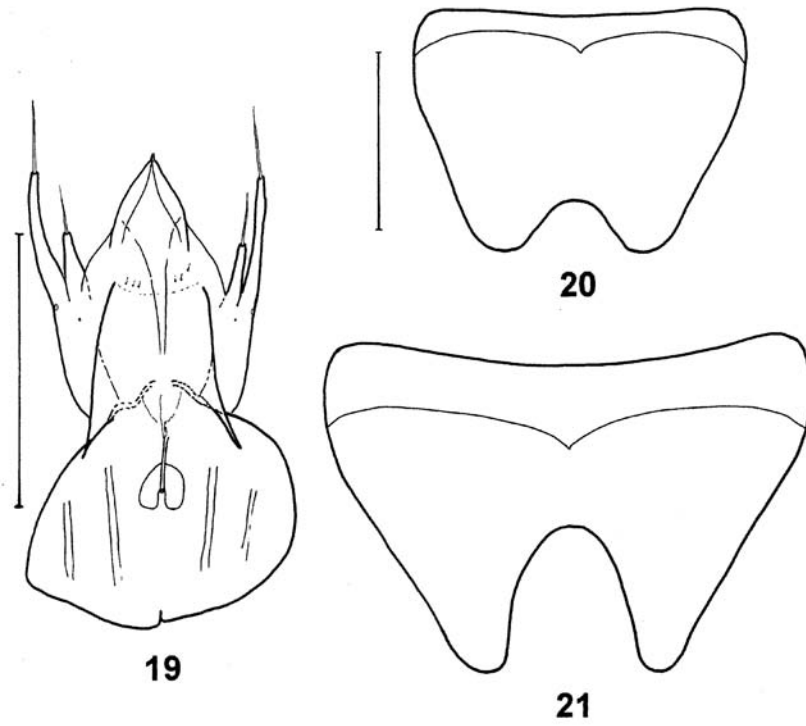


Figs. 13 & 14:  
Aedeagus in ventral (13) and in dorsal aspect (14) of *Edaphus apo* n.sp. (13, HT) and *E. kapac* n.sp. (14, HT).- Scale bar = 0.1 mm.



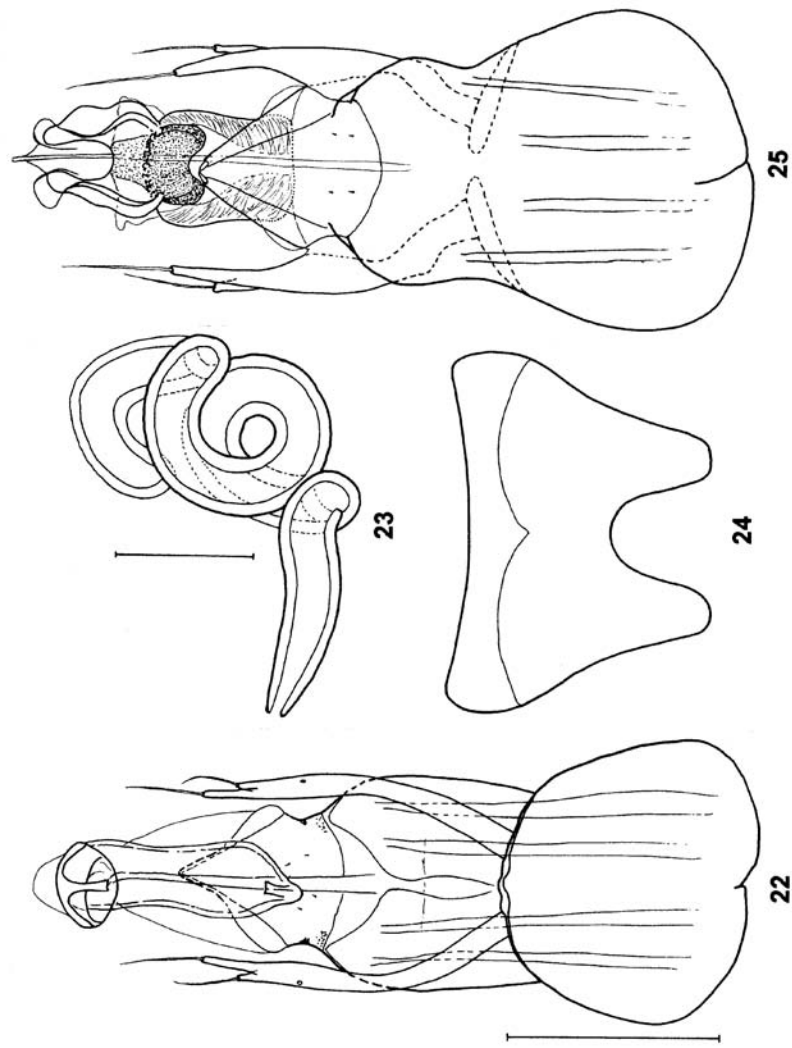
Figs. 15-18:  
Sternite 8 of males: *Edaphus apo* n.sp. (15, HT), *E. hidalgo* n.sp. (16, HT), *E. kapac* n.sp. (17, HT) and *E. caballero* n.sp. (18, HT).- Scale bar = 0.1 mm.



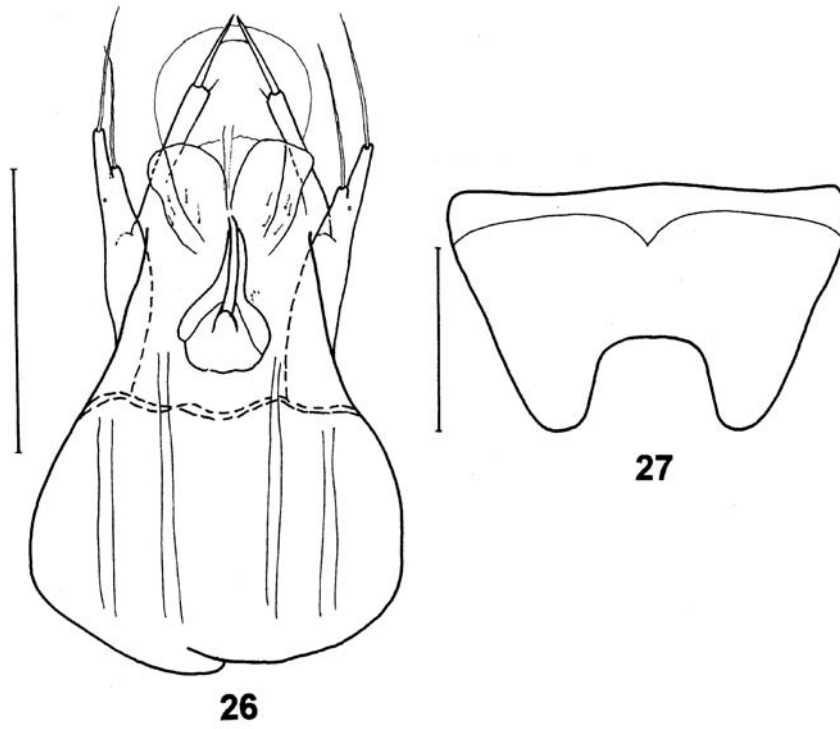


Figs. 19-21:

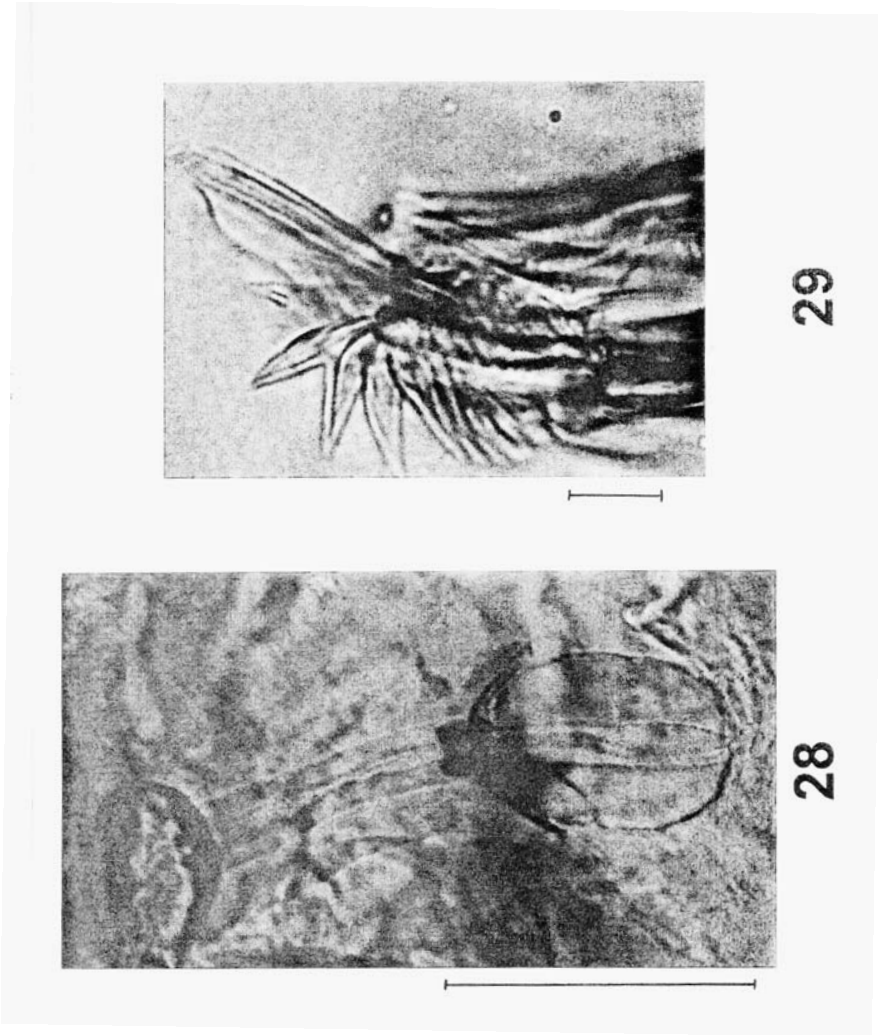
*Edaphus panamensis* n.sp. (HT): ventral aspect of aedeagus (19), sternite 8 of male (20).- *E. bierigi* n.sp. (HT): sternite 8 of male (21).- Scale bar = 0.1 mm.



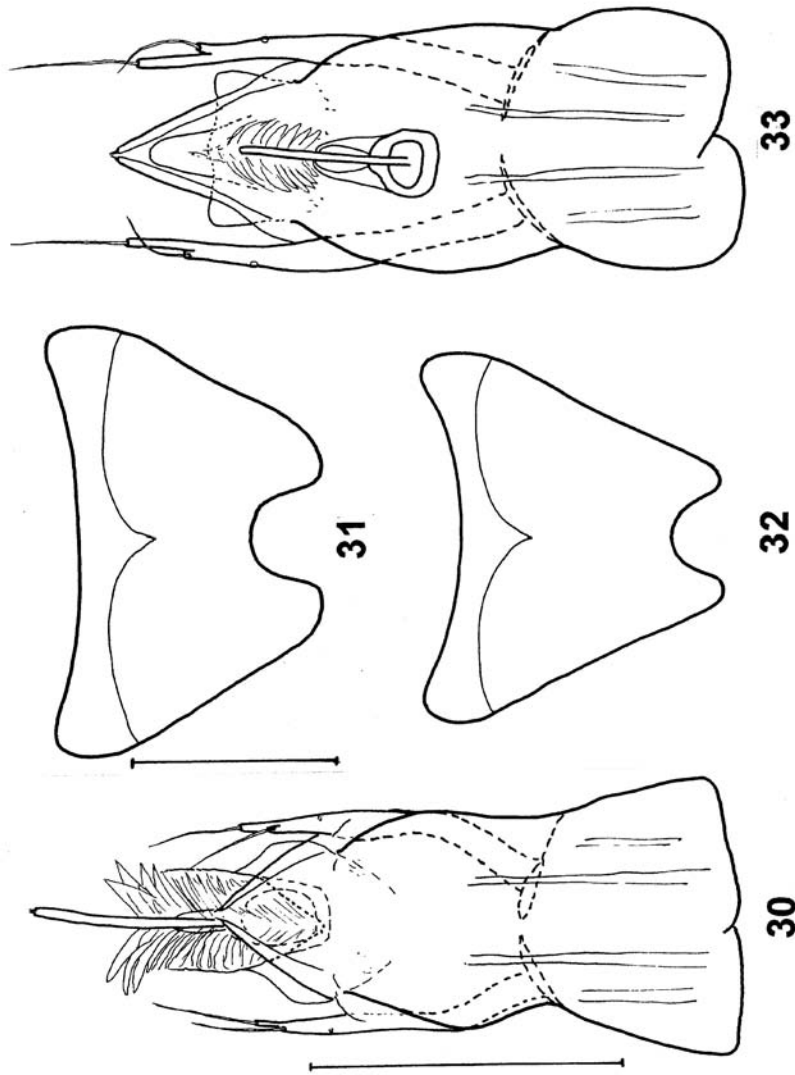
Figs. 22-25:  
*Edaphus bierigi* n.sp. (PT): dorsal aspect of aedeagus (22).- *E. kethleyi* n.sp. (HT): vesica seminalis (23), sternite 8 (24), ventral aspect of aedeagus (25).- Scale bar = 0.1 mm (22 = 25; 23 = 24).



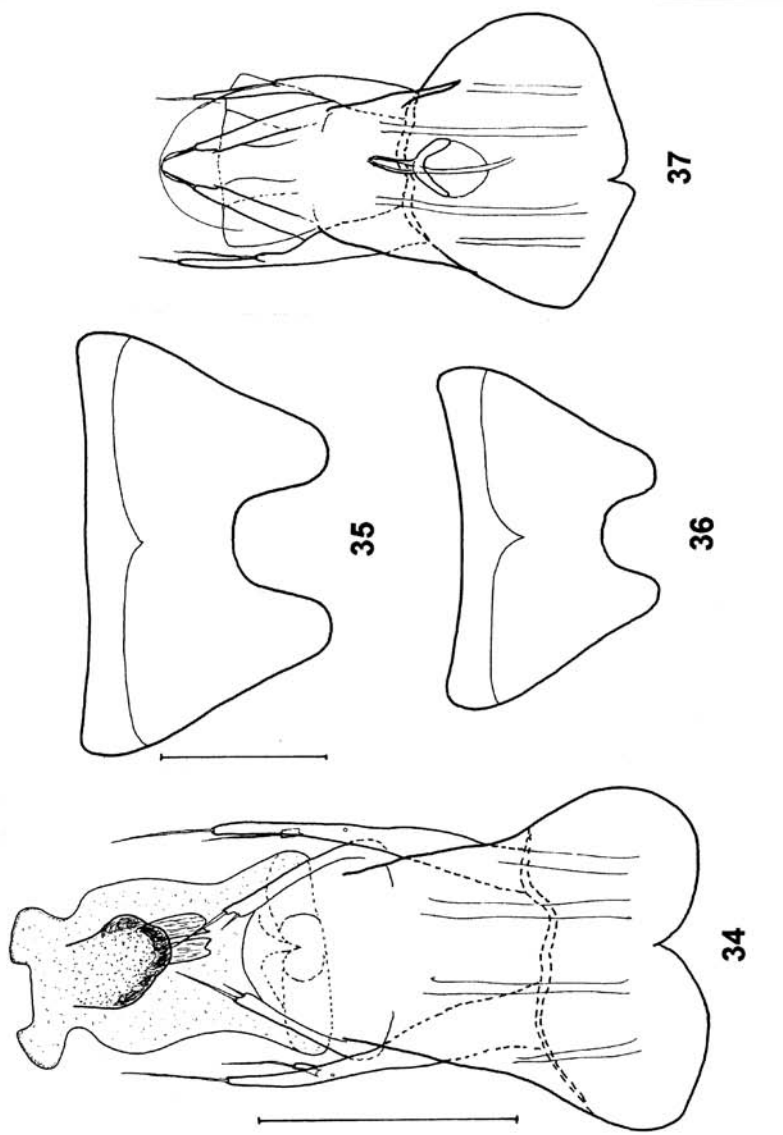
Figs. 26 & 27:  
*Edaphus dybasi* n.sp. (PT): ventral aspect of aedeagus (26) and sternite 8 of male (27).- Scale bar = 0.1 mm.



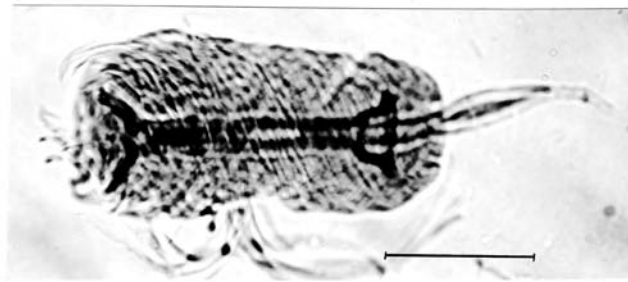
Figs. 28 & 29:  
*Edaphus dybasi* n.sp. (PT): twofold sperm pump (28). - *E. gallinaceus* n.sp. (PT): apical part of the extruded aedeagus in lateral aspect (29).  
Scale bar = 0.1 mm (28), 0.01 mm (29).



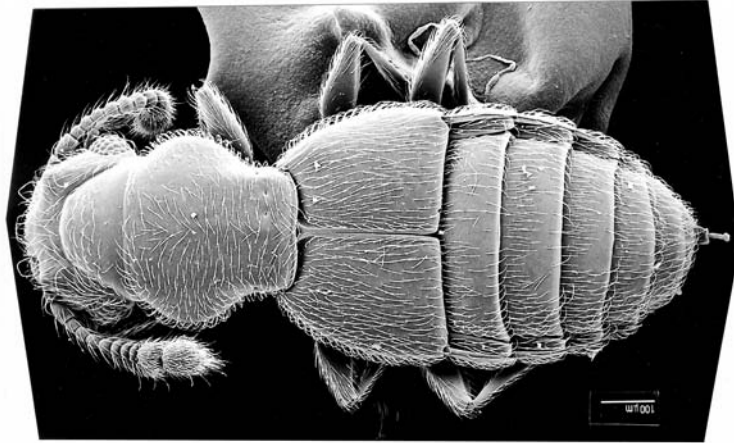
Figs. 30-33:  
 Ventral aspect of aedeagus (30, 33) and sternite 8 of males (31, 32): *Edaphus gallinaceus* n.sp. (30, 31, PT), *E. wagneri* n.sp. (32, 33, PT).  
 Scale bar = 0.1 mm (30 = 33; 31 = 32).



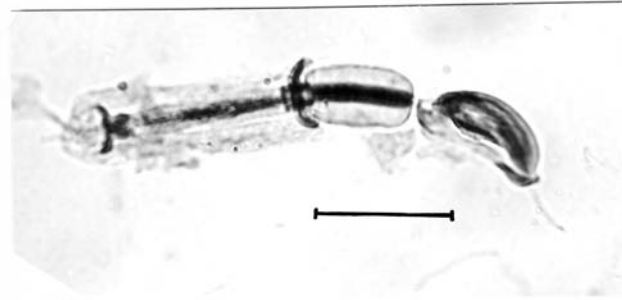
Figs. 34-37:  
 Ventral aspect of aedeagus (34, 37) and sternite 8 of male (35, 36): *Edaphus amigo* n.sp. (34, 35, PT), *E. andersonianus* n.sp. (36, 37, HT).  
 Scale bar = 0.1 mm (34 = 37; 35 = 36).



38

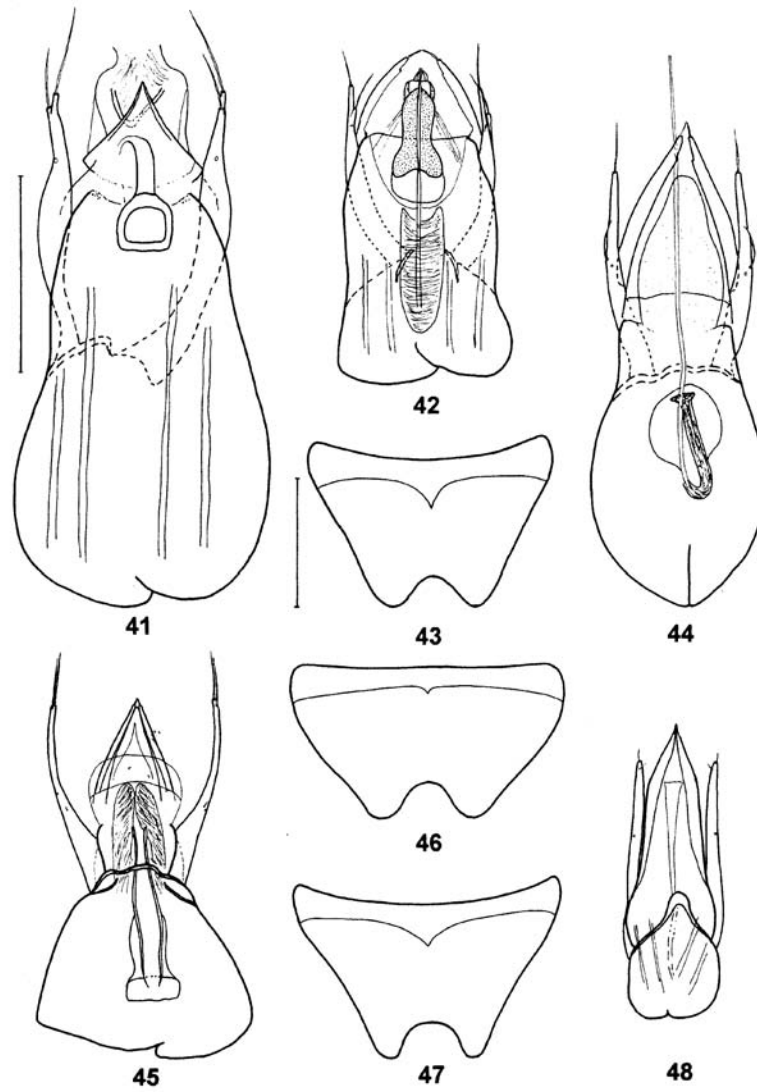


39



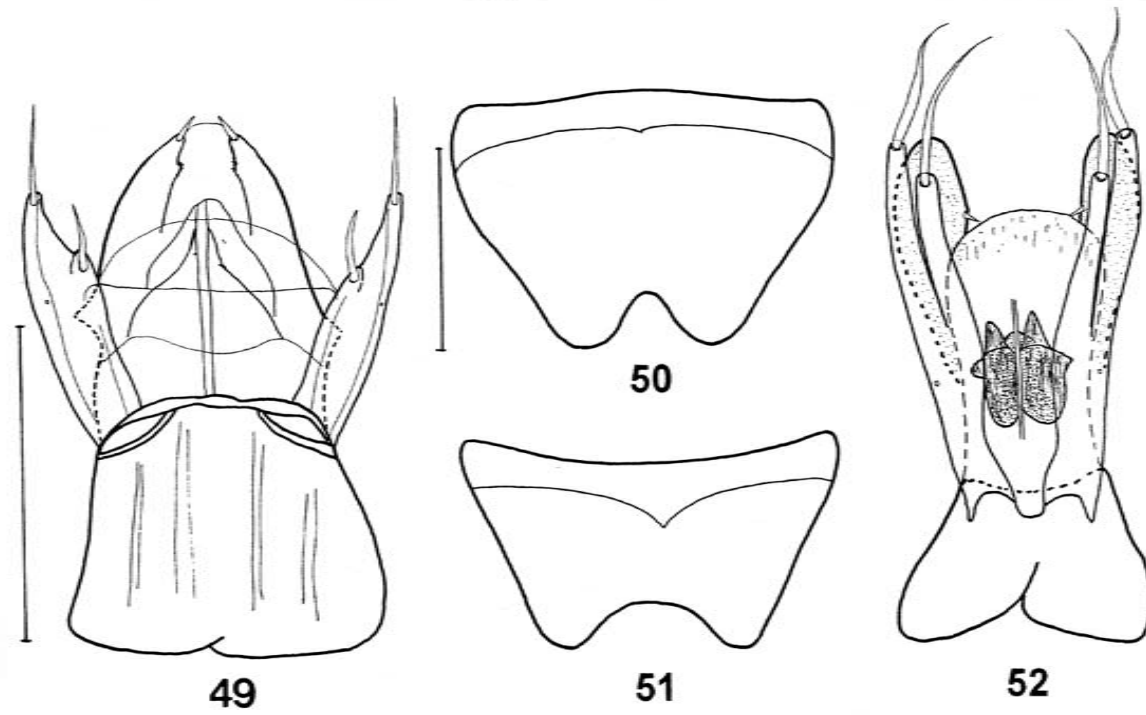
40

Figs. 38-40:  
*Edaphus dybasianus* n.sp.: Sperm pump (38, HT), habitus (39, PT).- *E. subtilipunctatus* n.sp.: twofold sperm pump and vesica seminalis (40, PT).- Scale bar = 0.1 mm.

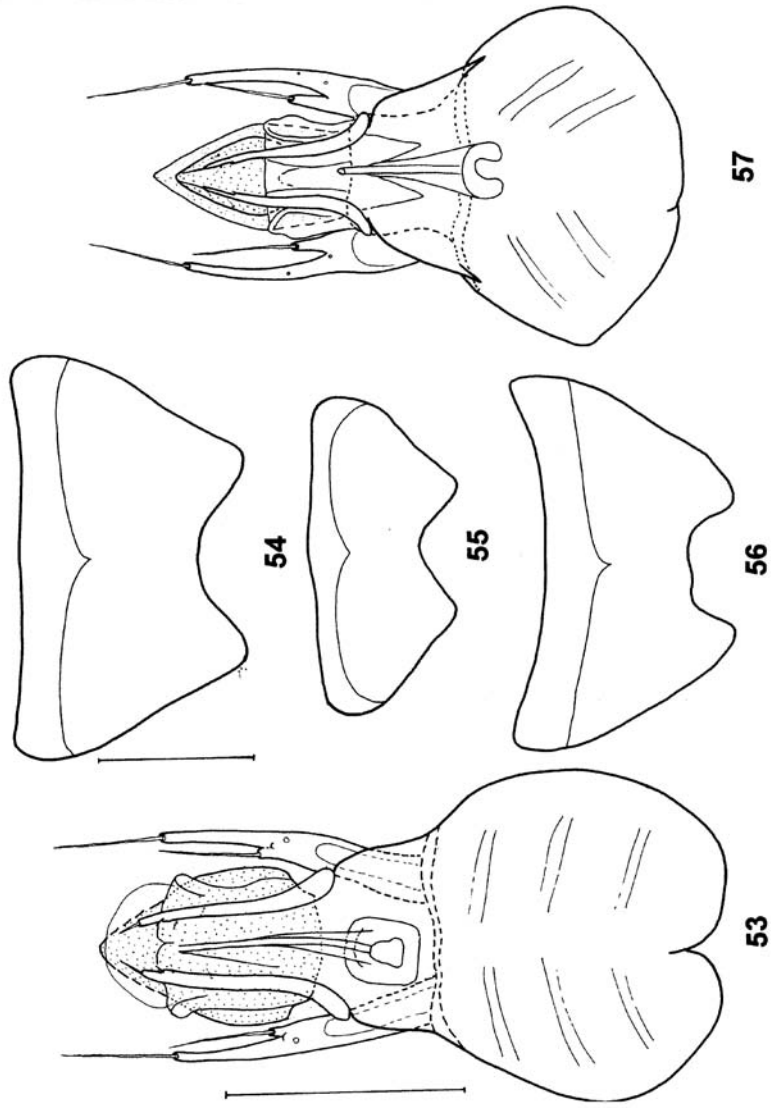


Figs. 41-48:  
 Aedeagus in ventral (41, 42, 44) and in dorsal aspect (45, 48) and sternite 8 of males (43, 46, 47):  
*Edaphus dybasianus* n.sp. (41, HT), *E. wagnerianus* n.sp. (42, 43, HT), *E. siphonifer* n.sp. (44, 47, PT),  
*E. subtilipunctatus* n.sp. (45, 46, PT), *E. newtoni* n.sp. (48, PT).- Scale bar = 0.1 mm (41 = 42, 44, 45, 48;  
 43 = 46, 47).





Figs. 49-52:  
 Aedeagus in dorsal (4) and in ventral aspect (49, 52) and sternite 8 of males (50, 51): *Edaphus cinche* n.sp. (49, HT), *E. newtoni* (50, HT),  
*E. villac* n.sp. (51, 52, HT).- Scale bar = 0.1 mm (49 = 52; 50 = 51).



Figs. 53-57:  
 Ventral aspect of aedeagus (53, 57) and sternite 8 of males (54-56): *Edaphus bolivianus* (53, 54, PT), *E. similifactus* n.sp. (55, 57, HT), *E. cinche* n.sp. (56, HT).- Scale bar = 0.1 mm (53 = 57; 54 = 55, 56).