Bull. Natl. Mus. Nat. Sci., Ser. A, **36**(3), pp. 75–93, September 22, 2010

Edaphus Species (Coleoptera, Staphylinidae, Euaesthetinae) of the Southwestern Islands of Japan*

Volker Puthz

Naturwissenschaftliche Abteilung, Burgmuseum Schlitz,
Vorderburg 1, D-36110 Schlitz, Germany
E-mail: stenus.Puthz@t-online.de

(Received 2 June 2010; accepted 23 June 2010)

Abstract Twenty-one new species of the genus *Edaphus* Motschulsky are described from the Southern Japanese Islands: *Edaphus bannadakemontis* sp. nov. (Ishigaki Is.), *E. bifoveolifrons* sp. nov. (Tokunoshima Is.), *E. callosifrons* sp. nov. (Ishigaki Is.), *E. cloanthus* sp. nov. (Ishigaki Is., Iriomote Is.), *E. diversipunctatus* sp. nov. (Okinawa-jima Is.), *E. fuscipennis* sp. nov. (Iriomote Is.), *E. impressipennis* sp. nov. (Amami-oshima Is.), *E. iriomoteanus* sp. nov. (Iriomote Is.), *E. ishigakiensis* sp. nov. (Ishigaki Is.), *E. kojimai* sp. nov. (Hateruma Is.), *E. kumejimanus* sp. nov. (Kume-jima Is.), *E. mezentius* sp. nov. (Amami-oshima Is.), *E. ogatai* sp. nov. (Yonaguni Is.), *E. omotomontis* sp. nov. (Ishigaki Is.), *E. perdifficilis* sp. nov. (Ishigaki Is.), *E. perexilis* sp. nov. (Kunigami, Okinawa-jima Is.), *E. sergestus* sp. nov. (Tokunoshima Is.), *E. silvius* sp. nov. (Okinawa-jima Is., Amami-oshima Is.), *E. takaii* sp. nov. (Amami-oshima Is.), *E. tokaraensis* sp. nov. (Tokara Isls.), and *E. yonaguniensis* sp. nov. (Yonaguni Is.). A key to the species of the Southwestern Islands of Japan is presented.

Key words : Coleoptera, Euaesthetinae, *Edaphus*, new species, key, Japan.

With more than 400 species the genus *Edaphus* Motschulsky has a worldwide distribution, mainly in the southern hemisphere. Eight species were known from Japan, two of them from Okinawa Prefecture. In this paper I describe material kindly made available to me by Dr. Shuhei Nomura from the National Museum of Nature and Science, Tokyo. This material contains three described and twenty-one new species.

In the descriptions several standard characters are considered which are described for each species to render a comparison possible. In order to shorten the individual descriptions acronyms are used for several of these characters, which are mainly explained in Fig. 1. The male sternite 9 mostly has two fields of small muscle-attachment sites in the posterior third (Figs. 2–3), somewhat resembling a honeycomb-like structure. The number of these attachment sites varies, but seems to be species-specific and is therefore given in brackets for each species.

The twenty-four species of the Southwestern Islands of Japan, fourteen of which are apterous or brachypterous, belong to at least four different groups: the *aeneas* group (four species), the *dissimilis* group (fourteen species, possibly four additional species) and two groups, which at present are not defined, each with one species. Most of the species represent northern, Palaearctic elements. Two species are Oriental elements (*E. riukiuensis* Puthz, *E. planus* Puthz).

The following acronyms are used: alfF＝antero-lateral furrows of frons; alpF＝antero-lateral portions of frons; ampF＝antero-median portion of frons; bf＝basal foveae of the pronotum; DE＝distance between eyes; df＝distal funnel of sperm pump; dlbc＝distance of the latero-basal carinae of the pronotum; E＝edeagus; EL: greatest length of elytra; EW＝greatest width of elytra; FB＝forebody; GL＝length of genae;

* 105th Contribution to the Knowledge of Euaesthetinae

hasm=honeycomb-like attachment sites of muscles; HT=holotype; lbc=latero-basal carinae of the pronotum; lbf=latero-basal foveae of the pronotum; LE=length of eyes; mbc=medio-basal carina of the pronotum; mbf=medio-basal fovea of the pronotum; mbct3=medio-basal carina of tergite 3; MHNG=Muséum d'histoire naturelle, Geneva; NSMT=National Museum of Nature and Science, Tokyo; PL=length of pronotum; PM=proportional measurements (1 unit=0.0085 mm); PT/T=paratype/s; ptfF=postero-transverse furrow of frons; PW=width of pronotum; SL=length of suture; SpP=sperm pump; TL=length of temples; vs=vesica seminalis.

Edaphus okinawaensis Puthz, 1980

(Figs. 11, 16)

Edaphus okinawaensis Puthz, 1980: 241f. fig.

Material studied. Holotype (♂): JAPAN: Okinawa Pref.: Okinawa-jima Is.: Mt. Nishimedake, 27. VII. 1951, F. Werner (Museum of Comparative Zoology, Harvard University, Cambridge, Mass.); 1♀: Okinawa Pref.: Okinawa-jima Is.: Yanbaru, NW of Mt. Yonaha-dake, 320 m, leaf litter, Y. Nishikawa; 1♂: Kagoshima Pref.: Amami-oshima Is.: Mt. Yuwan-dake, 8. V. 1987, S. Nomura; 1♀: Mt. Yuwan-dake, 5. V. 1987, S. Nomura; 1♀: Mt. Yui-dake, 15. V. 1983, S. Nomura; 2♀♀: Tokunoshima Is.: Akirigami Riv., 3. V. 1988, S. Nomura: in NSMT and in coll. Puthz.

Male: Sternite 8 with a triangular emargination in posterior quarter (Fig. 16). Sternite 9 lacking hasm. SpP about three times as long as the medianlobe, vs very small. Edeagus (Fig. 11), apical portion of median lobe triangularly narrowed, parameres shorter than median lobe, with a long apical and a long subapical seta.

This species may be easily identified by the lack of mbc, the fine and sparse punctuation of the pronotum and the comparatively large size. A photograph of the type can be downloaded from http://insects.oeb.harvard.edu/mcz/

Edaphus sergestus sp. nov.

(Figs. 7, 12, 17)

Apterous reddish brown, slightly shiny, forebody coarsely and very densely punctuate, punctuation of abdomen fine and dense; pubescence short, recumbent.

Length: 1.0–1.1 mm (forebody: 0.5 mm).

PM of the HT: HW: 23.3; DE: 19; LE: 6; TL: 2; GL: 7; PW: 24.3; PL: 23; dlbc: 16.5; EW: 27; EL: 21; SL: 15.5.

Male: Sternite 8 (Fig. 7). Sternite 9 with minute hasm (ca. 3). SpP 1.5× as long as median lobe, df broad (Fig. 7), vs as long as apical portion of the median lobe. Edeagus (Fig. 12), sides of apical portion convex, apex acute, parameres shorter than median lobe, with a short preapical and a slightly longer apical seta.

Head slightly narrower than pronotum, eyes narrow, slightly shorter than genae, temples distinct, about 1/3 as long as eyes, distinct ptfF and alfF missing, ampF indistinct; punctuation of frons coarse and dense, diameter of punctures as large as eye facets. Antennae short, club 2-segmented, segment 10 broader than long, segment 11 nearly twice as long as segment 10. Pronotum slender, nearly as long as broad, sides convex anteriorly, posteriorly shallowly concavely constricted; at base very narrow lbc and a nearly imperceptible narrow mbc extending to base proper, no distinct bf; punctuation coarse and very dense, resembling that of the frons; in posterior middle a very narrow±distinct longitudinal area might be slightly less densely punctuate. Elytra much broader than long, shoulders narrowly carinate, punctuation as on pronotum. Mbct3 short, in basal third of the tergite.

This new species belongs to the *aeneas*-group (Puthz, 2010: 304) where it is remarkable by the coarse and dense punctuation. It resembles closely *Edaphus cloanthus* sp. n., but may be distinguished by the basal carinae of the pronotum, shorter mbct3 and the uniform punctuation of the frons.

Holotype ♂: JAPAN: Kagoshima Pref.: Tokunoshima Is.: Mt. Inokawa-dake, 2. V. 1988,

S. Nomura: in NSMT.

Etymology. The name of this species is taken from the "Aeneis" of the Roman poet P. Vergilius Maro to indicate the membership of the species to the *aeneas*-group. Sergestus＝a companion of Aenas.

Edaphus cloanthus sp. nov.

(Figs. 8–10)

Apterous, reddish brown, slightly shiny, forebody coarsely and very densely punctuate, punctuation of abdomen fine and dense; pubescence short, recumbent.

Length: 1.0–1.1 mm (forebeody: 0.5 mm).

PM of the HT: HW: 24; DE: 19; LE: 6; TL: 1.5; GL: 7; PW: 26; PL: 24.5.; EW: 29; EL: 22; SL: 17.

Male: Unknown.

In nearly all respects similar to *E. sergestus*, but the frons near interocular pits with minute alfF, a small area between interocular foveae more sparsely punctuate, the pronotum lacking lbc and mbc, the shoulders are simple, and the mbct3 is much longer, nearly as long as the tergite.

Also this species belongs to the *aeneas*-group, where it may be easily distinguished by the coarse and dense punctuation with distinctly delimited punctures.

Holotype ♀ (REM-treated): JAPAN: Okinawa Pref.: Ishigaki Is.: Mt. Omoto-dake, 22. III. 1984, S. Nomura; 2♀♀ paratypes (1 of them fragmentary): Iriomote Is.: Kampiree, 27. III. 1984, S. Nomura. HT and 1 PT in NSMT, 1 PT in coll. Puthz.

Etymology. The name of this species is taken from the "Aeneis" of the Roman poet P. Vergilius Maro to indicate the membership of the species to the *aeneas*-group. Cloanthus＝a comrade of Aenas.

Edaphus mezentius sp. nov.

Macropterous, yellowish brown, moderately shiny, finely and very densely punctuate; pubescence short, recumbent.

Length: 1.0 mm (forebody: 0.55 mm).

PM of the HT: HW: 23; DE: 18; LE: 6; TL: 1.8; GL: 5; PW: 28; PL: 24; dlbc: 20; EW: 35; EL: 32; SL: 27.

Male: Unknown.

Head distinctly narrower than pronotum, eyes moderately large, temples distinct, nearly 1/3 as long as eyes, ptfF indistinct, alfF distinct, convergent, ampF moderately elevated posteriorly, flat anteriorly, anterior portion of frons moderately coarsely, densely punctuate. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 twice as long as segment 10. Pronotum broader than long, sides convex anteriorly, posteriorly moderately strongly constricted; at base distinct lbc, a distinct mbc extending to base proper, and 6 bf; punctuation moderately fine, very dense, diameter of punctures about as large as eye facets, basal area behind bf nearly smooth. Elytra slightly broader than long, shoulders simple, sides shallowly convex, punctuation resembling that of the pronotum, slightly less dense. Mbct3 short, in basal third of the tergite.

This new species belongs to the *aeneas*-group where it may be distinguished as indicated in the key.

Holotype ♀: JAPAN: Kagoshima Pref.: Amami-oshima Is.: Yui-dake, 10. VIII. 1984, S. Nomura: in NSMT.

Etymology. The name of this species is taken from the "Aeneis" of the Roman poet P. Vergilius Maro to indicate the membership of the species to the *aeneas*-group. "Mezentius"＝an opponent of Aenas.

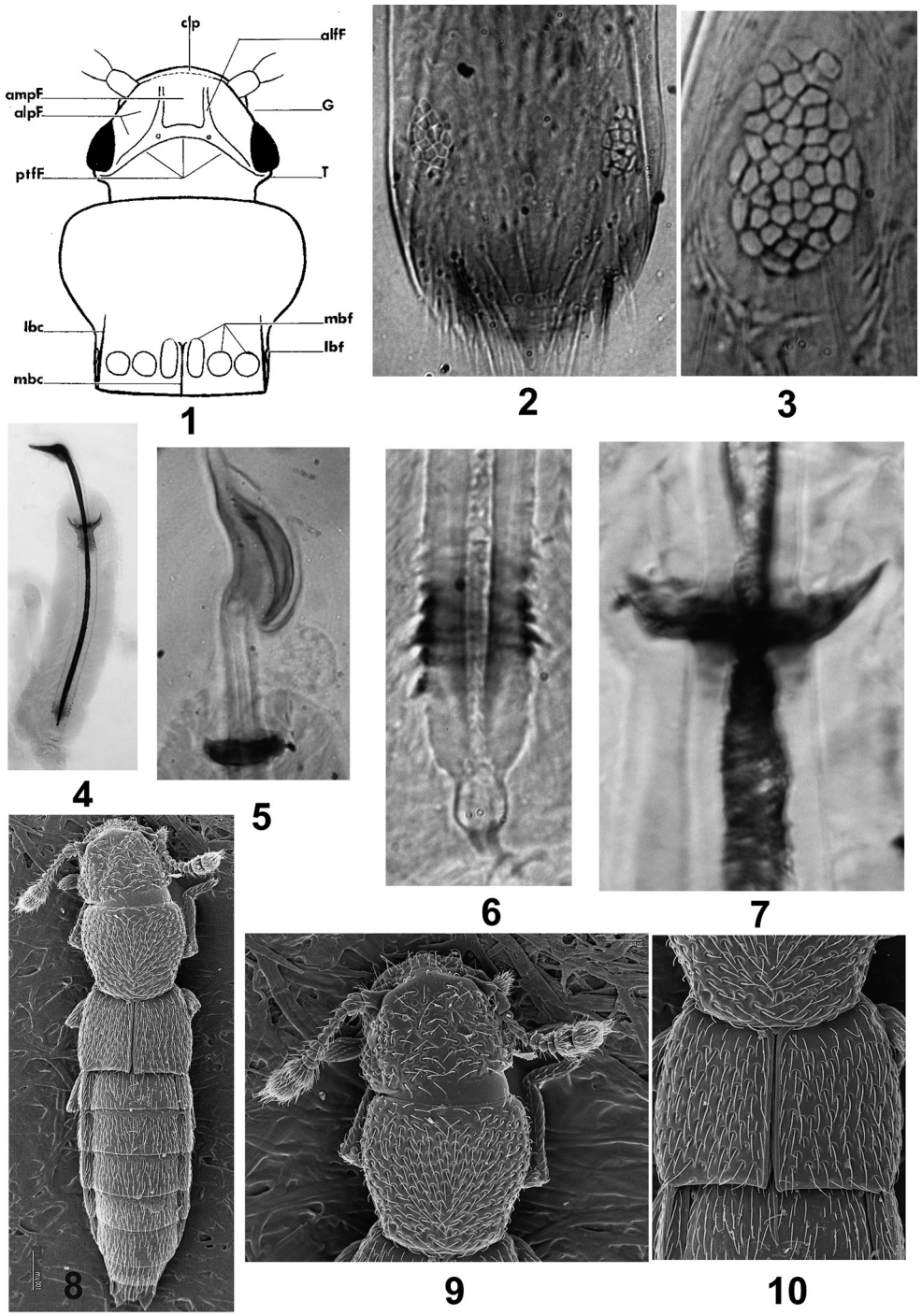
Edaphus silvius sp. nov.

(Figs. 2, 5, 13, 18)

Apterous, brown, matt, pronotum and elytra very densely punctuate (rimulose longitudinally); pubescence short, recumbent.

Length: 1.0–1.2 mm (forebody: 0.5–0.55 mm).

PM of the HT: HW: 28; DE: 19.5; LE: 7; TL: 2; GL: 5; PW: 31; PL: 29; dlbc: 19.5; EW: 36;



Figs. 1–10. Head and pronotum of *Edaphus* sp. with acronyms (see introduction) (1), posterior portion of sternite 9 of male with muscle attachment sites (2), detail of 2 (3), sperm pump and vesica seminalis (4), distal funnel of sperm pump and vesica seminalis (5), proximal portion of sperm pump (6), distal funnel of sperm pump (7), habitus (8), head and pronotum (9) and elytra (10) of *Edaphus silvius* sp. nov. (HT, 2), *E. naomii* Puthz (3), *E. memmius* Puthz (4), *E. silvius* sp. nov. (5), *E. palinurus* Puthz (6), *E. sergestus* sp. nov. (HT, 7), *E. cloanthus* sp. nov. (HT, 8). — Scale omitted.

EL: 27; SL: 21.

Male: Sternite 8 (Fig. 18). Sternite 9 with distinct hasm (ca. 15; Fig. 2). SpP about 4/5 as long as the medianlobe, df short (Fig. 5), vs as long as half of the apical portion of the median lobe. Edeagus (Fig. 13), anterior portion of median lobe rounded anteriorly, dorsal plate bifid on each side, parameres slightly shorter than median lobe, with one moderately long apical seta and a strong seta in anterior quarter.

Head slightly narrower than pronotum, eyes large, moderately coarsely facetted, temples distinct, less than 1/3 as long as eyes, ptfF short, together with short alfF forming a "M", ampF small, broader than long, slightly callus-like elevated, narrower than each of the alpF; no distinct punctation present but the frons not smooth but very finely sculptured. Antennae short, club 2-segmented, segment 10 broader than long, segment 11 about 1.5× as long as segment 10. Pronotum slender, slightly broader than long, sides in anterior half moderately convex, posteriorly distinctly, nearly straightly, constricted; at base distinct lbc, a mbc extending to base proper and 6+ indistinct, very small bf; punctuation moderately coarse, extremely dense, longitudinally confluent, rimulose. Elytra much broader than long, shoulders with a fine and short carina, sides slightly convexely widened; sculpture as on pronotum. Mbct3 long, extending nearly to the posterior margin of the tergite.

This new species also belongs to the *aeneas*-group and may be distinguished from its relatives as indicated in the key.

Holotype ♂: JAPAN: Okinawa Pref.: Okinawajima Is.: Kunigami V.: Benoki, 22. VIII. 1991, K. Ogata. 1♀ paratype: Kagoshima Pref.: Amamioshima Is.: Mt. Yuwan-dake, 6. XII. 1985, Y. Takai.-HT in NSMT, PT in coll. Puthz.

Etymology. The name of this species is taken from the "Aeneis" of the Roman poet P. Vergilius Maro to indicate the membership of the species to the *aeneas*-group. Silvius＝son of Aenas.

Edaphus iriomoteanus sp. nov.

(Figs. 19, 21)

Brachypterous, reddish brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.0–1.2 mm (forebody: 0.6 mm).

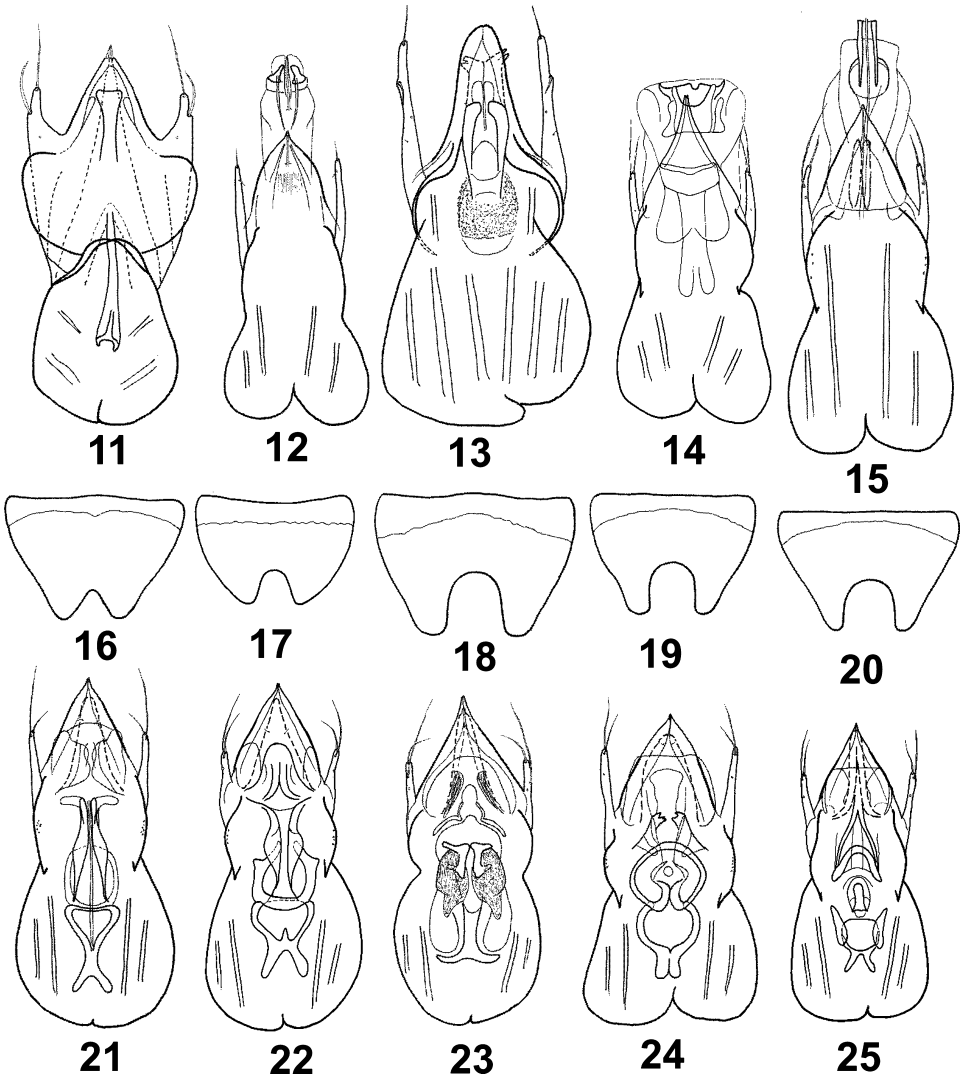
PM of the HT: HW: 27.5; DE: 20; LE: 6; TL: 1.5; GL: 5; PW: 30; PL: 25.5; dlbc: 20; EW: 35; EL: 27.5; SL: 21.

Male: Sternite 8 (Fig. 19). Sternite 9 with distinct hasm (12–14). SpP and vs of the type of *E. dissimilis*. Edeagus (Fig. 21), apical portion of median lobe triangularly narrowed, parameres distinctly shorter than median lobe, with a long preapical and a shorter apical seta.

Head narrower than pronotum, eyes moderately coarsely facetted, moderately large, temples distinct, about 1/4; as long as eyes, ptfF distinct, alfF slightly convex, ampF as broad as each of the alpF, distinctly but slightly elevated, not distinctly separated from clypeus; posterior impression of alpF large, as large as antennal segment 10. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 nearly twice as long as segment 10. Pronotum broader than long, sides in anterior half slightly convex, posteriorly strongly, concavely constricted; at base distinct lbc, which are elongated anteriad nearly to the anterior third of the pronotum, a strong mbc extending to base proper, and 4 large bf, the mbf elongated anteriad bordering a longitudinal, Y-shaped elongation of the mbc, which extends to the middle of the pronotum. Elytra much broader than long, shoulders simple, sides slightly convex; a shallow longitudinal impression postero-laterally. Mbct3 short, at most as long as the basal third of the tergite.

This new species belongs to the *dissimilis*-group (Puthz, 1979: 109; 2010: 266) and may be distinguished from its relatives as indicated in the key.

Holotype ♂ and 1♀ paratype: JAPAN: Okinawa Pref.: N. Iriomote Is.: Urauchi River, Kanbire Fls., sifting forest litter, 25. XII. 2008, S. Vit. HT in MHNG, PT in coll. Puthz.



Figs. 11–25. Ventral aspect of edeagus (1–15, 21–25) and sternite 8 of male (16–20) of *Edaphus okinawaensis* Puthz (HT, 11, 16), *E. sergestus* sp. nov. (HT, 12, 17), *E. silvius* sp. nov. (HT, 13, 18), *E. riukiuensis* Puthz (HT, 14), *E. ishigakiensis* sp. nov. (PT, 15, 20), *E. iriomoteanus* sp. nov. (HT, 19, 21), *E. bannadakemontis* sp. nov. (22), *E. perdifficilis* sp. nov. (23), *E. takaii* sp. nov. (HT, 24) and *E. nomurai* Puthz (Ishigaki Is., 25). — Scales = 0.1 mm (1 = 12–15, 21–25; 16 = 17–20).

Etymology. The name of this species is derived from the locality where it has been discovered.

Edaphus fuscipennis sp. nov.

Macropterous, reddish brown, elytra, except shoulders, and abdominal segments infuscate; pubescence short, recumbent.

Length: 1.0–1.3 mm (forebody: 0.6–0.65 mm).

PM of the HT: HW: 28; DE: 21; LE: 7; TL: 2; GL: 4; PW: 33.5; L: 29; dlbc: 22; EW: 40; EL: 33; SL: 27.

Male: Unknown.

Head much narrower than pronotum, eyes finely facetted, moderately long, temples distinct, nearly 1/3 as long as eyes, ptfF distinct, alfF distinct, slightly convergent, ampF about as broad as

each of the alpF, slightly but distinctly elevated, not separated from clypeus, posterior impressions of alpF large, about as large as antennal segment 11, anterior impression of alpF distinct. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 nearly twice as long as segment 10. Pronotum distinctly broader than long, sides in anterior half slightly convex, posteriorly strongly, concavely constricted; at base distinct lbc extending anteriad to the middle of the pronotum, a distinct mbc extending to base proper and (slightly broadened) anteriad to the middle of the pronotum, and 4 large bf, mbf elongated anteriad. Elytra broader than long, shoulders simple. Mbct3 short, not really extending to the middle of the tergite.

This species belongs to the *dissimilis*-group. It resembles strongly *E. iriomoteanus* but may be distinguished by the much narrower head, larger elytra and the remarkable coloration of the elytra, which are brownish to dark brown with reddish brown shoulders.

Holotype ♀ and 1♀ paratype: JAPAN: Okinawa Pref.: N. Iriomote Is.: Urauchi River, Kanbire Fls., sifting forest litter, 25. XII. 2008, S. Vit. HT in MHNG, PT in coll. Puthz.

Etymology. The name of this species indicates the coloration the elytra: "*fuscipennis*" (Lat.)=with (dark) brown elytra.

Edaphus riukiuensis Puthz, 1980

(Fig. 14)

Edaphus riukiuensis Puthz, 1980: 242f.

Material studied. Holotype (♂): JAPAN: Okinawa: Kanna, 7.–27. VIII. 1945, C. T. Parsons and F. G. Werner (Museum of Comparative Zoology, Harvard University, Cambridge, Mass.). A photograph of the type can be downloaded from http://insects.oeb.harvard.edu/mcz/

Male: Edeagus (Fig. 14), apical portion of medianlobe triangularly narrowed, sides slightly concave, parameres much shorter than medianlobe, with a very long preapical and a long apical seta.

Edaphus ishigakiensis sp. nov.

(Figs. 15, 20)

Macropterous, forebody reddish brown, abdomen brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.2–1.5 mm (forebody: 0.7 mm).

PM of the HT: HW: 30; DE: 20; LE: 7.5; TL: 2; GL: 4; PW: 36.5; PL: 30; dlbc: 25; EW: 46; EL: 43; SL: 35.

Male: Sternite 8 (Fig. 15). Sternite 9 with distinct hasm (10–18). SpP twice as long as the medianlobe, vs small, slightly shorter than the apical portion of the medianlobe. Edeagus (Fig. 20), apical portion of medianlobe triangularly narrowed, parameres much shorter than medianlobe, with a long preapical and a shorter apical seta.

Head distinctly narrower than pronotum, eyes large, prominent, moderately finely facetted, temples oblique, distinct, about 1/3 as long as eyes, genae short, ptfF and alfF distinct, ampF as broad as each of the alpF, very slightly elevated, not separated from clypeus, posterior impression of alpF large, about as large as antennal segment 11. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 about twice as long as segment 10 in the male, shorter in the female. Pronotum distinctly broader than long, sides in anterior half convex, posteriorly strongly constricted; at base distinct lbc, which are curved and elongated anterior to the anterior quarter of the pronotum, a strong mbc extending to base proper and Y-shaped broadened/elongated anteriad, and 4(–6) bf, mbc elongated, and becoming narrower anteriad to the anterior quarter of the pronotum. Elytra large, nearly as long as broad, shoulders simple. Mbct3 at most as long as half of the tergite.

This new species may be easily identified by the peculiar shape of the pronotum.

Holotype ♂ and 1♀ paratype: JAPAN: Okinawa Pref.: W coast of Ishigaki Is., W slope of Mt. Nosoko-dake, under bark, 26. XII. 2008, S. Vit. Paratypes: 2♂♂: Mt. Banna-dake, 19. III. 1993, S. Nomura; 1♂: Hirano, 19. III. 1993, S. Nomura. HT in MHNG, PTT in NSMT and in

coll. Puthz.

Etymology. The name of this species is derived from the locality where it has been discovered.

Edaphus bannadakemontis sp. nov.

(Figs. 22, 52)

Macropterous, reddish brown, moderately shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.4 mm (interpolated from experience: 1.1–1.4 mm) (forebody: 0.7 mm).

PM of the HT: HW: 27; DE: 19; LE: 7.5; TL: 2; GL: 4; PW: 30.5; PL: 27; dlbc: 21; EW: 40; EL: 36; SL: 30.

Male: Sternite 8 (Fig. 52). Sternite 9 with distinct hasm (13–14). SpP and vs of the type of *E. dissimilis*. Edeagus (Fig. 22), anterior portion of median lobe triangularly narrowed, parameres much shorter than median lobe, with a very long preapical and a long apical seta.

In many respects similar to *Edaphus ishigakiensis*, but the head broader, the pronotum narrower, the mbc line-like elongated anteriad, and the sexual characters of the male different.

The new species also resembles very much *E. perodibilis* Puthz from Taiwan, but the head is broader, the mbc shorter and the lbc are stronger and more elongated anteriad.

Also this new species belongs to the *dissimilis* group. From the relatives it may be distinguished as indicated in the key.

Holotype ♂: JAPAN: Okinawa Pref.: Ishigaki Is.: Mt. Banna-dake, 20. IV. 1983, H. Kojima, in NSMT.

Etymology. The name of this species is derived from the locality where it has been discovered.

Edaphus perdifficilis sp. nov.

(Fig. 23)

Macropterous, forebody reddish brown, abdomen brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.0–1.3 mm (forebody: 0.6–0.65 mm).

PM of the HT: HW: 27; DE: 18; LE: 8; TL: 1; GL: 3; PW: 30; PL: 26; dlbc: 20; EW: 39; EL: 37; SL: 30.

Male: Sternite 8 wth a rounded notch in about posterior two thirds. Sternite 9 with distinct hasm (ca. 12). SpP and vs of the type of *Edaphus dissimilis*. Edeagus (Fig. 23), anterior portion of median lobe triangularly narrowed, parameres much shorter than medianlobe, with a long preapical and a shorter apical seta.

Head narrower than pronotum, eyes large, finely facetted, temples very short, oblique, ptfF and alpF distinct, ampF as broad as each of the alpF, slightly elevated, not separated from clypeus, posterior impression of alpF large, about as large as antennal segments 1+2 combined. Antennae short, club 2-segmented, segment 10 as broad as long (♂) or broader than long (♀), segment 11 1.5x as long as segment 10. Pronotum broader than long, sides in anterior half convex, posteriorly strongly constricted; at base distinct lbc, a mbc extending to base proper, and 4(–6) distinct bf. Elytra large, nearly as long as broad, shoulders simple, sides shallowly convex. Mbct3 at most as long as half of the tergite.

This new species belongs to the *dissimilis*-group where it strongly resembles several species as e. g. *Edaphus insuavis* Puthz from Taiwan. For sure identification dissection of the male is requested.

Holotype ♂ and 1♀ paratype: JAPAN: Okinawa Pref.: W coast of Ishigaki Is., W slopes of Mt. Nosoko-dake, under barks, 26. XII. 2008, S. Vit. HT in MHNG, PT in coll. Puthz.

Etymology. The name of this species is derived from the difficulty in identifying this species: "*perdifficilis*" (Lat.)=very difficult.

Edaphus impressipennis sp. nov.

(Figs. 35, 40)

Apterous, reddish brown, shiny, pronotum and elytra with some punctures; pubescence short, recumbent.

Length: 0.9–1.0 mm (forebody: 0.5 mm).

PM of the HT: HW: 24.5; DE: 18; LE: 6; TL: 1.5; GL: 4; PW: 27.5; PL: 23; dlbc: 15.5; EW:

30; EL: 23; SL: 20.

Male: Sternite 8 (Fig. 40). Sternite 9 with small hasm (ca. 8). SpP weakly sclerotized, vs not found. Edeagus (Fig. 35), apical portion of medianlobe triangularly narrowed, sides straight, parameres shorter than median lobe, with two moderately long setae.

Head distinctly narrower than pronotum, eyes small, temples distinct, ptfF distinct, with two minute oval impressions posteriorly, alfF distinct, ampF slightly callus-like elevated, about as broad as each of the alpF, not separated from clypeus, alpF with a large posterior impression, which is as large as the elevated ampF; alpf near antennal base finely punctulate. Antennae short, club 2-segmented, segment 10 broader than long, segment 11 twice as long as segment 10. Pronotum distinctly broader than long, sides in anterior half nearly straight, posteriorly strongly constricted; at base distinct lbc which are elongated anteriad nearly to the anterior margin of the pronotum, with a distinct mbc extending to base proper and also elongated anteriad nearly to the anterior margin of the pronotum, and with 4 large bf; some punctures are present near anterior end of lbc laterally and near the elongated mbc anteriorly. Elytra much broder than long, shoulders with a minute carina, a narrow longitudinal impression in posterior three fifths; some moderately coarse punctures in sutural third, arranged longitudinally. Mbct3 nearly as long as half of the tergite.

This new species may easily identified by the shape of the pronotum, the small posteromedian foveae of the frons and the lateral impression of the elytra. From the species which have resembling characters it may be distinguished as indicated in the key.

Holotype ♂: JAPAN: Kagoshima Pref.: Amami-oshima Is.: Mt. Yui-dake, 10. VIII. 1984, S. Nomura: in NSMT.

Etymology. The name of this species is derived from the posterolateral impression of the elytra: "*impressipennis*" (Lat.) = elytra with impressions.

Edaphus bifoveolifrons sp. nov.

(Figs. 36, 41)

Apterous, reddish brown, shiny, pronotum and elytra with few punctures; pubescence short, recumbent.

Langth: 1.0–1.2 mm (forebody: 0.55–0.60 mm).

PM of the HT: HW: 27; DE: 19.5; LE: 6.5; TL: 2; GL: 5; PW: 30; PL: 28; dlbc: 19.5; EW: 37; EL: 30; SL: 24.

Male: Sternite 8 (Fig. 41). Sternite 9 with small hasm (ca. 6). SpP weakly sclerotized, vs not found. Edeagus (Fig. 36), apical portion of medianlobe triangularly narrowed, sides convex, parameres shorter than median lobe, with a short preapical and a longer apical seta.

In nearly all respects similar to *E. impressipennis*, but larger, pronotum longer, ampF separate from clypeus by a transverse furrow, mbct3 longer, extending to the posterior third of the tergite.

This new species may be identified as indicated in the key.

Holotype ♂ and 1♀ paratype: JAPAN: Kagoshima Pref.: Tokunoshima Is.: Tete, 4. V. 1988, S. Nomura; 1♀-paratype: Tokunoshima Is.: Mt. Inokawadake, 2. VI. 1988, S. Nomura. HT and 1 PT in NSMT, 1 PT in coll. Puthz.

Etymology. The name of this species is derived from the two minute posteromedian foveae of the frons: "*bifoveolifrons*" (Lat.)=with two minute foveae on the frons.

Edaphus takaii sp. nov.

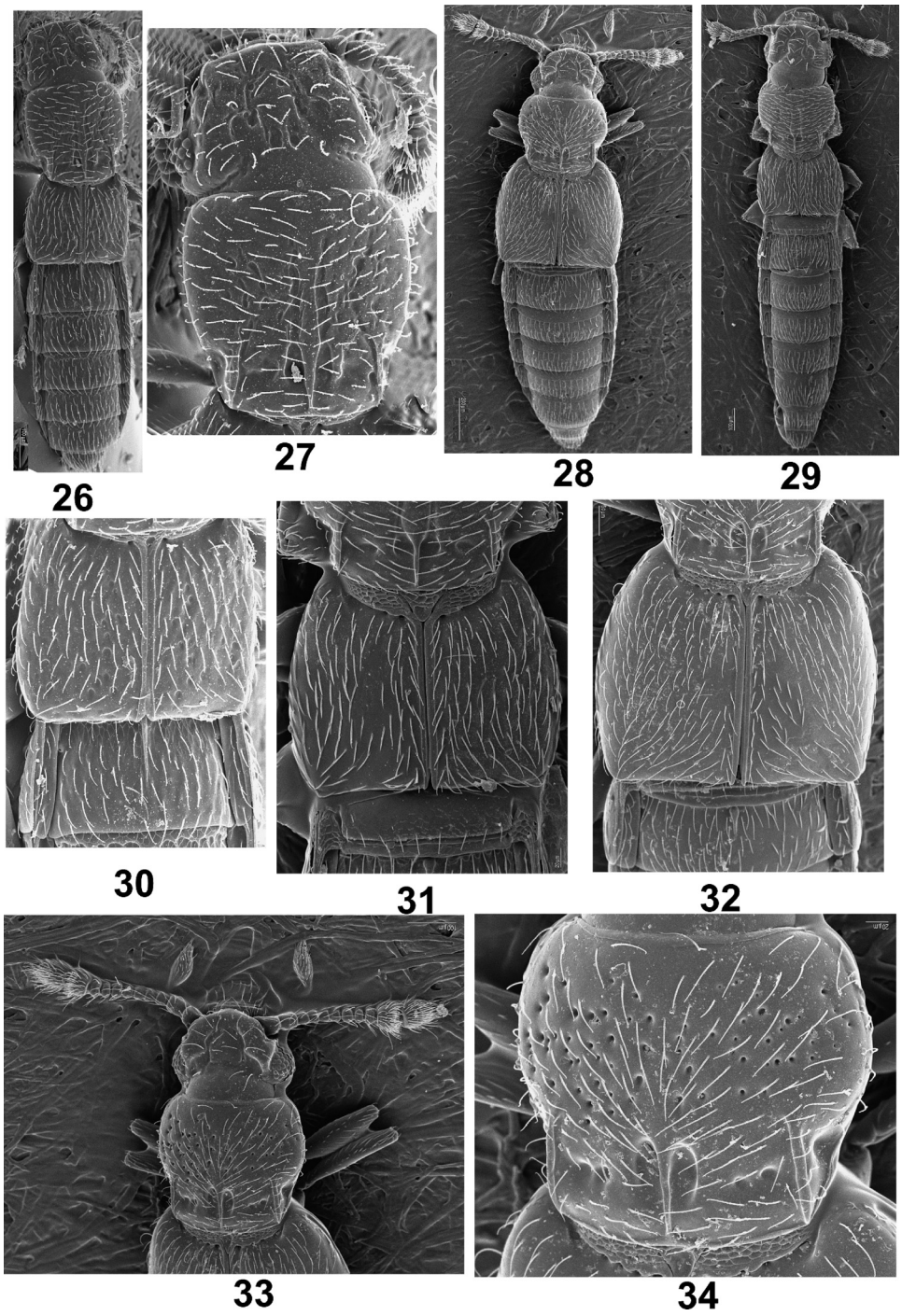
(Fig. 24)

Apterous, reddish brown, shiny, pronotum and elytra±distinctly punctuate; pubescence short, recumbent.

Length: 1.0–1.2 mm (forebody: 0.6 mm).

PM of the HT: HW: 33; DE: 25: LE: 7.5; TL: 2; GL: 4; PW: 38; PL: 30; dlbc: 25: EW: 45; EL: 33; SL: 25.

Male: Sternite 8 (about as in fig. 55). Sternite 9 with distinct hasm (ca. 10–11). SpP and vs of



Figs. 26–34. Habitus (26, 28, 29), head and pronotum (27, 33), elytra (30–32) and pronotum (34) of *Edaphus perexilis* sp. nov. (PT, 26, 27, 30), *E. nomurai* Puthz (Ishigaki Is., 28, 32–34) and *E. yonaguniensis* sp. nov. (PT, 29, 31).

the type of *Edaphus dissimilis*. Edeagus (fig. 24), apical portion of median lobe triangularly narrowed, parameres shorter than median lobe, with two long apical setae.

In most respects similar to *Edaphus impressipennis*, but larger and more robust, ampF narrower than each of the alpF, anteriorly separated from clypeus by a transverse furrow, which is very narrowly interrupted medially. Pronotum and elytra similar to those of *E. impressipennis*, but lacking humeral carinae and the posterolateral impression of the elytra shorter, shallower, less distinct; punctuation variable: distinct in the HT, less distinct (shallower) in the PTT. Mbct3 slightly longer than half of the tergite (HT), slightly shorter in the PTT.

This new species belongs to the *dissimilis*-group and may be distinguished from its relatives as indicated in the key.

Holotype ♂: JAPAN: Kagoshima Pref.: Amami-oshima Is.: Mt. Yuwan-dake, 6. XII. 1985, Y. Takai. Paratypes: 1♀: Amami-oshima Is.: Naze-shi, 7. XII. 1985, Y. Takai; 1♂: Amami-oshima Is.: Chûô Rindo, 18. IV. 1980, S. Imasaka. HT and PTT in NSMT.

Etymology. The new species is named in honour of the collector Mr. Yasushi Takai (Seki City, Gifu Pref.).

Edaphus perexilis sp. nov.

(Figs. 26–27, 30, 37, 42)

Apterous, very slender, reddish brown, moderately shiny, densely and finely punctuate/sculptured; pubescence short, recumbent.

Length: 0.8–0.95 mm (forebody: 0.40–0.45 mm).

PM of the HT: HW: 21; DE: 17; LE: 4; TL: 2; GL: 4; PW: 22; PL: 21; dlbc: 14; EW: 23.5; EL: 21; SL: 17.

Male: Sternite 8 (Fig. 42). Sternite 9 with small, distinct hasm (ca. 3). SpP 3× as long as median lobe, vs not found. Edeagus (Fig. 37), apical portion of median lobe triangularly pointed, parameres reduced to small stubs, with a short and a long apical seta.

Head slightly broader than pronotum, eyes short and narrow, coarsely facetted, temples distinct, about half as long as eyes, no ptfF but two minute oval impressions, alfF comparatively broad, ampF narrow, much narrower than each of the alfF, slightly elevated, not separated from clypeus, alfF and anterior alpF finely sculptured. Antennae short, club 2-segmented, segment 10 broader than long, segment 11 twice as long as segment 10. Pronotum very slender, nearly as long as broad, sides in anterior three quarters slightly convex, posteriorly shallowly constricted; at base distinct lbc, a mbc extending to base proper and elongated anteriad to the anterior quarter of the pronotum, and with 4 bf; surface finely and irregularly sculptured/punctuate. Elytra slightly broader than pronotum, slightly broader than long, shoulders simple, punctuation moderately coarse, dense, rough. Mbct3 long, exceeding the middle of the tergite.

This new species is one of the smallest of the genus; it may be easily identified by the peculiar characters of frons and pronotum.

Holotype ♂ and 1♂, 2♀♀ paratypes: JAPAN: Okinawa Pref.: Okinawa-jima Is.: Kunigami-son: Ie Rindo, 22. III. 1986, S. Nomura. Paratypes: 4♂♂, 2♀♀: *ibidem*, 14. III. 1985, S. Nomura; 1♂: Kunigami-son: Mt. Nishime-dake, 14. III. 1991, S. Nomura. HT and PTT in NSMT, PTT also in coll. Puthz.

Etymology. The name is derived from the very slender shape of the species: "*perexilis*" (Lat.)＝very slender.

Edaphus kumejimanus sp. nov.

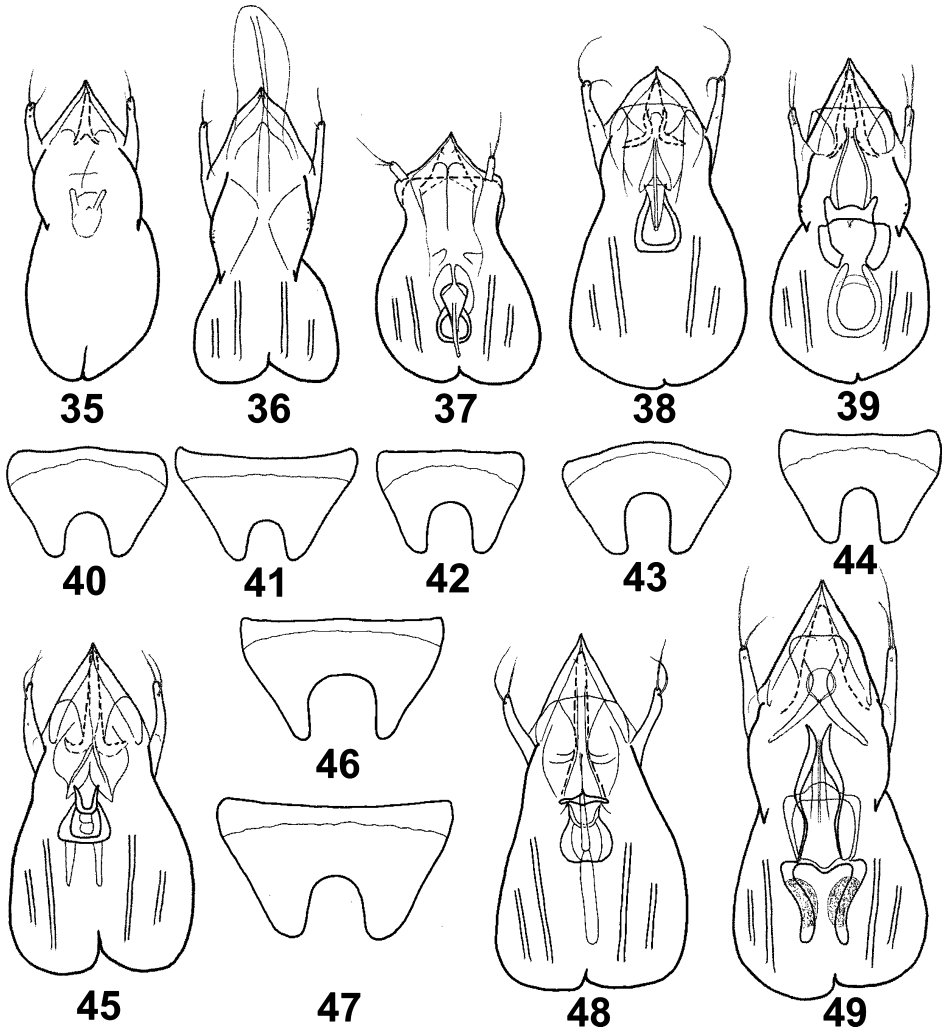
(Figs. 38, 43)

Apterous, yellowish brown, shiny, elytra punctuate; pubescence short, recumbent.

Length: 0.9–1.0 mm (forebody: 0.5 mm).

PM of the HT: HW: 23; DE: 16; LE: 6; TL: 2; GL: 4; PW: 26; PL: 23; dlbc: 16; EW: 29; EL: 25; SL: 18.

Male: Sternite 7 shallowly enmarginate at posterior margin. Sternite 8 (Fig. 43). Sternite 9 with distinct hasm (ca. 7). SpP and vs of the type of



Figs. 35–49. Ventral aspect of edeagus (35–39, 45, 48, 49) and sternite 8 of male (40–44, 46, 47) of *Edaphus impressipennis* sp. nov. (HT, 35, 40), *E. bifoveolifrons* sp. nov. (HT, 36, 41), *E. perexilis* sp. nov. (PT, 37, 42), *E. kumejimanus* sp. nov. (HT, 38, 43), *E. yonaguniensis* sp. nov. (PT, 39, 44), *E. tokaraensis* sp. nov. (HT, 45, 46), *E. diversipunctatus* sp. nov. (HT, 47, 48) and *E. ogatai* sp. nov. (PT, 49). — Scales = 0.1 mm (35 = 36–39, 45, 48, 49); 40 = 41–44, 46, 47).

Edaphus dissimilis. Edeagus (Fig. 38), apical portion of median lobe triangularly narrowed, parameres slightly shorter than median lobe, with a shorter preapical and a longer apical seta.

Head distinctly narrower than pronotum, eyes moderately large, moderately coarsely facetted, about 1/3 as long as eyes, ptfF and alfF distinct, ampF narrower than each of the alpF, slightly elevated, separated from clypeus by a narrow transverse sulcus, posterior impression of alpF large. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 nearly twice as long as segment 10. Pronotum slightly broader than long, sides convex anteriorly, posteriorly shallowly concavely constricted; at base distinct lbc, which are elongated anteriad to the anterior quarter of the pronotum and bordered there with ± distinct punctures, with a distinct mbc extending to base proper and, becoming slightly broader, elongated anteriad to the anteri-

or quarter of the pronotum, and with 4 bf, the mbf elongated anteriad. Elytra distinctly broader than long, shoulders with a minute carina, sides convexely widened; punctuation coarse, irregular, mainly in posterior half. Mbct3 longer than half of the tergite.

This new species belongs to the *dissimilis*-group. It may be distinguished from its relatives as indicated in the key.

Holotype ♂ and 1♂ paratype: JAPAN: Okinawa Pref.: Kume-jima Is.: Mt. Darumayama, 7. IV. 1994, T. Ueno. HT in NSMT, PT in coll. Puthz.

Etymology. The name is derived from the locality where the new species has been discovered.

Edaphus yonaguniensis sp. nov.

(Figs. 29, 31, 39, 44)

Apterous, reddish brown, moderately shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.1–1.3 mm (forebody: 0.55–0.60 mm).

PM of the HT: HW: 24; DE: 19; LE: 5; TL: 2; GL: 4; PW: 26; PL: 24; dlbc: 16; EW: 29; EL: 24.5; SL: 19.

Male: Sternite 8 (Fig. 44). Sternite 9 with distinct hasm (5–7). SpP and vs. of the type of *Edaphus dissimilis*. Edeagus (Fig. 39), apical portion of median lobe triangularly narrowed, parameres much shorter than median lobe, with a long preapical and a shorter apical seta.

Slender, head slightly narrower than pronotum, eyes short and narrow, coarsely facetted, temples distinct, more than 1/3 as long as eyes, ptfF and alfF distinct, ampF much narrower than each of the alpF, about as large as posterior impressions of alpF, distinctly elevated, not separated from clypeus, alpF finely sculptured medially. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 twice as long as segment 10. Pronotum slightly broader than long, sides shallowly convex anteriorly, posteriorly shallowly concavely constricted; at base distinct lbc, which are extended anteriad by a curved sulcus, with a distinct mbc extending to base proper and, becoming slightly broader, elongated anteriad to the anterior quarter of the pronotum, and with 4 distinct bf. Elytra broader than long, shoulders simple, sides shallowly convex. Mbct3 short, in the anterior third of the tergite.

This new species belongs to the *dissimilis*-group and may be distinguished as indicated in the key.

Holotype ♂ and 4♂♂, 1♀ paraypes: JAPAN: Okinawa Pref.: Yonaguni Is: Kubura, 22. IV. 1993, H. Kojima. Paratypes: 3 ♂♂: Yonaguni Is.: nr. Hikawa, 3. VIII. 1992, H. Kojima; 1♂: Hikawa-Sonai, 3. VIII. 1992, K. Ogata. HT and PTT in NSMT, PTT also in coll. Puthz.

Etymology. The name is derived from the locality where the new species has been discovered.

Edaphus tokaraensis sp. nov.

(Figs. 45–46)

Macropterous, reddish brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.0–1.2 mm (forebody: 0.6 mm).

PM of the HT: HW: 27; DE: 19.5; LE: 7; TL: 2.5; GL: 3; PW: 32.5; PL: 26.5; dlbc: 20; EW: 40; EL: 35; SL: 28.

Male: Sternite 8 (Fig. 46). Sternite 9 with distinct hasm (10–12). SpP and vs of the type of *Edaphus dissimilis*. Edeagus (Fig. 45), apical portion of median lobe triangularly narrowed, parameres shorter than median lobe, with a long preapical and a shorter apical seta.

In many respects similar to *E. yonaguniensis*, but broader, head much narrower than pronotum, lbc elongated anteriad to the middle of the pronotum, mbct3 longer, as long as half of the tergite.

This new species also belongs to the *dissimilis*-group; it may be distinguished from its relatives as indicated in the key.

Holotype ♂ and 2♂♂, 3♀♀ paratypes: JAPAN: Kagoshima Pref.: Tokara Isls.: Akuseki Is., 7. III. 1984, T. Kurozumi; 1♀ paratype: Tokara Isls.:

Nakano-shima Is., 29. IV. 1987, S. Nomura. HT and PTT in NSMT, 2 PTT in coll. Puthz.

Etymology. The name is derived from the locality where the new species has been discovered.

Edaphus diversipunctatus sp. nov.

(Figs. 47–48)

Brachypterous, reddish brown, moderately shiny, pronotum and elytra coarsely and densely punctuate; pubescence short, recumbent.

Length: 1.1–1.4 mm (forebody: 0.65–0.70 mm).

PM of the HT: HW: 33; DE: 24; LE: 8; TL: 2; GL: 4; PW: 40; PL: 33; dlbc: 26; EW: 49; EL: 39; SL: 30.

Male: Sternite 8 (Fig. 47). Sternite 9 with distinct hasm (9–14). SpP twice as long as the medianlobe, vs about as long as the apical portion of the median lobe. Edeagus (Fig. 48), apical portion of median lobe triangularly narrowed, sides straight, parameres much shorter than median lobe, with a long preapical and a less long apical seta.

Head much narrower than pronotum, eyes large, moderately coarsely facetted, temples distinct, about 1/4 as long as eyes, ptfF and alfF distinct, ampF slightly narrower than each of the alpF, slightly elevated, not separated from clypeus, posterior impression of alpf large, anterior portion of frons very finely punctuate. Antennae short, club 2-segmented, segment 10 slightly broader than long, segment 11 about 1.5× as long as segment 10. Pronotum slightly broader than long, sides nearly straight anteriorly, posteriorly very strongly concavely constricted; at base distinct lbc, a mbc extending to base proper and, becoming slightly broader, elongated anteriad nearly to the anterior margin of the pronotum, and with 4–6 bf; surface coarsely, very densely, somewhat irregularly punctate, declining lateral portions of the pronotum impunctate. Elytra much broader than long, shoulders with a minute carina, sides slightly widened, punctuation variegate coarse (largest punctures twice as large as finest punctures), dense, largest punctures nearly as large as basal cross section of antennal segment 3; a narrow area near suture and the sides of elytra narrowly impunctate. Mbct3 much longer than half of the tergite.

This new species probably belongs to the *dissimilis*-group. Because of the peculiar sculpture of the pronotum and the elytra it may be easily identified.

Holotype ♂ and 1♀ paratype: JAPAN: Okinawa Pref.: Okinawa-jima Is.: Yanbaru, NNW of Mt. Yonahadake, 320 m, 20. X. 1987, Y. Nishikawa; 1♂-paratypes: Okinawa, Ie Rindo, 20. IV. 1986, S. Nomura. HT and 1 PT in NSMT, 1 PT in coll. Puthz.

Etymology. The name of this new species indicates the variegate coarse punctuation of the elytra: "*diversipunctatus*" (Lat.)=with variegate punctuation.

Edaphus nomurai Puthz, 2010

(Figs. 25, 28, 32–34, 51)

Edaphus nomurai Puthz, 2010: 24f. figs.

Material studied: 2♂♂, 2♀♀: Okinawa Pref.: Ishigaki-jima Is.: Mt. Banna-dake, 19. III. 1993, S. Nomura; 1♀: *ibidem*, 20. IV. 1993, H. Kojima; 2♀♀: Mt. Omoto-dake, 22. III. 1984, S. Nomura; 1♂, 2♀♀: Mt. Omoto-dake, 22. III. 1984, S. Nomura; 1♂: W coast of Ishigaki Is., E slopes of Mt. Yarabu-dake, dry gully litter, 26. XII. 2008, S. Vit; 1♂, 3♀♀: *ibidem*, sifting decaying wood, 26. XII. 2008, S. Vit; 1♀: Iriomote-jima Is.: Kampiree, 14. IV. 1986, S. Nomura; 1♀: Kagoshima Pref.: Amami-oshima Is.: Yamato-hama, 24. III. 1978, S. Naomi, in NSMT, MHNG and coll. Puthz.

This species of the *dissimilis*-group is remarkable by the coarse punctation of the pronotum. It was recently described from Taiwan.

Edaphus omotomontis sp. nov.

Apterous, reddish brown, moderately shiny, pronotum and elytra punctuate; pubescence

short, recumbent.

Length: 0.8–0.9 mm (forebody: 0.45–0.50 mm).

PM of the HT: HW: 24; DE: 18; LE: 5.5; TL: 2.5; GL: 5; PW: 26; PL: 23; dlbc: 16.5; EW: 29; EL: 23; SL: 19.

Male: Unknown.

Head slightly narrower than pronotum, eyes moderately large, temples distinct, nearly half as long as eyes, ptfF and alfF distinct, ampF about half as broad as each of the alpF, distinctly elevated, not separated from clypeus, posterior impression of alpF large, about as large as antennal segment 10; frons with some minute punctures anteriorly. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 about 1.5× as long as segment 10. Pronotum slightly broader than long, sides shallowly convex anteriorly, posteriorly moderately concavely constricted; at base distinct lbc, a distinct mbc extending to base proper and narrowly elongated anteriad to the anterior quarter of the pronotum, and with 4 large bf; punctuation moderately coarse, dense medially, fine and moderately dense laterally. Elytra broader than long, shoulders with a minute carina; punctuation coarse and variegate dense, coarser than on the pronotum, largest punctures nearly as large as basal cross section of antennal segment 3. Mbct3 distinctly longer than half of the tergite.

This new species is one of the smallest in the genus. It resembles *E. diversipunctatus* but is much smaller and the pronotum is less coarsely, less irregularly sculptured. From the other relatives it may be distinguished as indicated in the key.

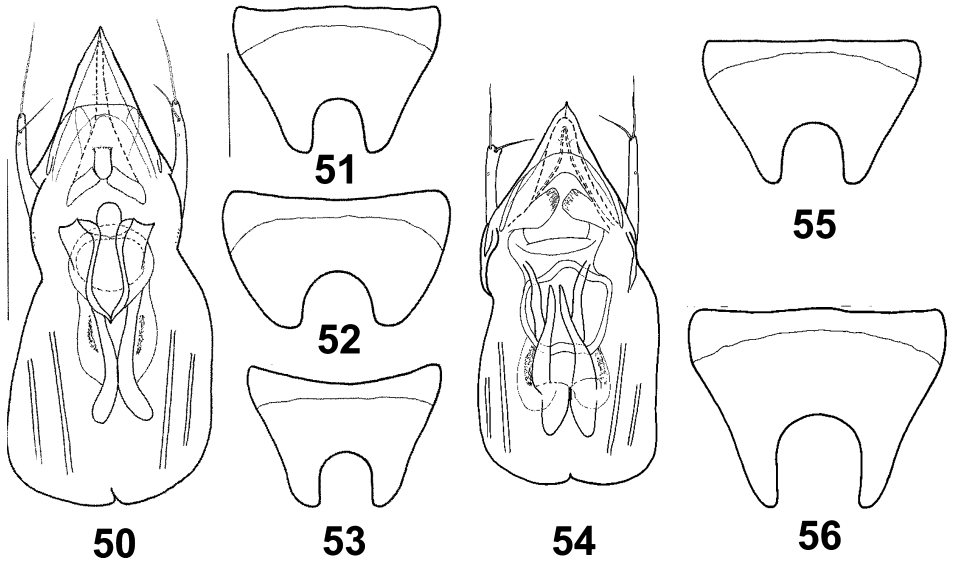
Holotype ♀ and 1♀ paratype: JAPAN: Okinawa Pref.: Ishigaki Is.: Mt. Omoto-dake, 22. III. 1984, S. Nomura. HT in NSMT, PT in coll. Puthz.

Etymology. The name of this species is taken from the locality where the species has been discovered.

Edaphus callosifrons sp. nov.

(Figs. 50, 56)

Macropterous, reddish brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.



Figs. 50–56. Ventral aspect of edeagus (50, 54) and sternite 8 of male (51–53, 55, 56) of *Edaphus callosifrons* sp. nov. (PT, 50, 56), *E. nomurai* Puthz (Ishigaki Is., 51), *E. bannadakemontis* sp. nov. (HT, 52), *E. ogatai* sp. nov. (PT, 53), *E. kojimai* sp. nov. (HT, 54) and *E. ishigakiensis* sp. nov. (PT, 55). — Scales=0.1 mm (50=54; 51=52, 53, 55, 56).

Length: 1.4–1.8 mm (forebody: 0.8 mm).

PM of the HT: HW: 31.5; DE: 24; LE: 6,5; TL: 0.5; GL: 3; PW: 39; PL: 32; dlbc: 26; EW: 50; EL: 43; SL: 36.

Male: Sternite 8 (Fig. 56). Sternite 9 with distinct hasm (15–22). SpP and vs of the type of *Edaphus difficilis*. Edeagus (Fig. 50), anterior portion of median lobe triangularly narrowed, parameres much shorter than median lobe, with a long preapical and a very long apical seta.

Head much narrower than pronotum, eyes large, prominent, finely facetted, no distinct temples in the male, small distinct temples in the female; ptfF distinct, alfF distinct, convergent, ampF about as broad as each of the alpF, broader than long, distinctly elevated and separated from clypeus by a shallow transverse impression; alpF strongly callus-like elevated near eyes, posterior impression large. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 about 1.5× as long as segment 10. Pronotum broader than long, sides convex anteriorly, posteriorly strongly concavely constricted; at base distinct lbc, a mbc extending to base proper and 6 bf; in the middle of the pronotum a shallow and narrow longitudinal impression is±distinct. Elytra broader than long, shoulders simple, sides shallowly convex. Mbct3 short, in the basal third of the tergite.

This new species belongs to the *dissimilis*-group and resembles closely several other species, especially *E. callifrons* Puthz from Taiwan, but is distinguished from him by the shorter elytra and the sexual characters of the male.

Holotype ♂ and 2♂♂, 3♀♀ paratypes: JAPAN: Okinawa Pref.: Ishigaki Is.: Mt. Banna-dake, 20. IV. 1993, H. Kojima. Paratypes: 1♂: *ibidem*, 18.–22. IX. 1981, K. Morimoto; 1♀: Ishigaki Is.: Hirakubo, 19. III. 1993, S. Nomura. HT and PTT in NSMT, PTT also in coll. Puthz.

Etymology. The name is derived from the strong callus-like elevations of the anterolateral portions of frons: "*callosifrons*" (Lat.) = with callous frons.

Edaphus ogatai sp. nov.

(Figs. 49, 53)

Brachypterous, reddish brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.1–1.4 mm (forebody: 0.6–0.65 mm).

PM of the HT: HW: 26.8; DE: 19.5; LE: 6.5; TL: 1.5; GL: 3; PW: 31; PL: 26.5; dlbc: 20.5; EW: 36.5; EL: 30; SL: 23.

Male: Sternite 8 (Fig. 53). Sternite 9 with distinct hasm (7–10). SpP and vs of the type of *Edaphus dissimilis*. Edeagus (Fig. 49), anterior portion of medianlobe triangularly narrowed, parameres shorter than medianlobe, with one long and one shorter apical seta.

Head distinctly narrower than pronotum, eyes moderately large, temples distinct, about $^1/_4$ as long as eyes (♂) or slightly longer (♀), ptfF and alfF distinct, ampF nearly as broad as each of the alpF, distinctly but slightly elevated, separated from clypeus by a narrow transverse furrow, posterior impressions of alpF large, few very fine punctures sometimes on front anteriorly. Antennae short, club 2-segmented, segment 10 distinctly broader than long, segment 11 about 1.5× as long as segment 10. Pronotum broader than long, sides nearly straight anteriorly, posteriorly very strongly concavely constricted; at base distinct lbc, a mbc extending to base proper and 4–6 bf, mbc elongated. Elytra distinctly broader than long, shoulders simple, sides shallowly convex. Mbct3 short, in the basal third of the tergite.

This new species belongs to the *dissimilis*-group and resembles several other species of that group, especially *E. montivagans* Puthz from Taiwan, but may be distinguished by the more slender habitus, the nearly straight anterior outline of the pronotum, the more prominent temples and the male sexual characters. From the other *Edaphus* of the Southwestern Japanese islands it may be distinguished as indicated in the key.

Holotype ♂ and 6♂♂, 3♀♀ paratypes: JAPAN: Okinawa Pref.: Yonaguni Is.: Kubura, 22. IV. 1993, H. Kojima. Paratypes: 1♂, 1♀: Mt. Urabudake, 17. III. 1993, S. Nomura; 1♂, 1♀: near

Hikawa, 3. VIII. 1992, K. Ogata. HT and PTT in NSMT, PTT also in coll. Puthz.

Etymology. This species is named in honour of its collector, Dr. Kazuo Ogata (Fukuoka).

Edaphus kojimai sp. nov.

(Fig. 54)

Brachypterous, reddish brown, shiny, apart from setiferous punctures impunctate; pubescence short, recumbent.

Length: 1.1–1.5 mm (forebody: 0.6 mm).

PM of the HT: HW: 27.5; DE: 20; LE: 5.5; TL: 2.5; GL: 5; PW: 30.5; PL: 26; dlbc: 19.5; EW: 35; EL: 30; SL: 24.

Male: Sternite 8 with a round emargination in about posterior two fifth. Sternite 9 with distinct hasm (ca. 8). SpP and vs of the type of *Edaphus dissimilis*. Edeagus (fig. 54) very similar to that of *Edaphus ogatai*, but larger and with different inner structures.

In most respects similar to *E. ogatai*, but the eyes smaller, the ampF not separated from clypeus, and the anterior outline of the pronotum slightly convex.

Also this species belongs to the *difficilis*-group; it may be best distinguished from its close relatives by the male sexual characters.

Holotype ♂ and 2♀♀ paratypes: JAPAN: Okinawa Pref.: Hateruma Is.: Buribuchi Park, 17. IV. 1993, H. Kojima. HT and 1 PT in NSMT, 1 PT in coll. Puthz .

Etymology. This species is named in honour of its collector, Dr. Hiroaki Kojima (Atsugi).

Edaphus cf. *planus* Puthz, 1979

Edaphus planus Puthz, 1979: 140 f., Puthz, 1998: 53, 2010: 37.

Material studied. 1♀: JAPAN: Okinawa Pref.: Yonaguni-jima Is.: Mt. Inbi-dake, 23. IV. 1993, H. Kojima (NSMT).

This species has been described from Vietnam and has been recorded from Hongkong and Malaysia. The records from Taiwan and from Yonaguni island, females, have to be verified by the respective male.

Key to the ***Edaphus*** species of South Western Islands of Japan

1 (6) Mediobasal carina of pronotum lacking or not extending to the base proper
2 (3) Larger: 1.7–2.1 mm. Pronotum finely and sparsely punctate. ♂: E (Fig. 11) ····· ····· *okinawaensis* Puthz [Okinawa-jima Is., Amami-oshima Is., Tokunoshima Is.]
3 (2) Smaller: 1.0–1.2 mm
4 (5) Head nearly as broad as pronotum. Pronotum coarsely and densely punctuate (Fig. 9). ♂: unknown ····· ***cloanthus*** sp. nov. [Tokunoshima Is.]
5 (4) Head much narrower than pronotum. Pronotum finely and densely punctate. ♂: E (Fig. 36, Puthz, 1979) ····· *planus* Puthz [Yonaguni Is.; China, Taiwan, Vietnam, Malaysia]
6 (1) Base of pronotum with a median carina extending to base proper
7 (40) Mediobasal carina of pronotum long, extending anteriad at least to the middle of the pronotum (included are also species in which the median carina becomes slightly broader and less elevate and is separated from the rest of surface by narrow longitudinal furrows)
8 (33) Laterobasal carinae of pronotum elongate (either as carina or as sulcus), extending anteriad at least to the middle of the pronotum
9 (18) Pronotum punctuate, sometimes only with few punctures
10 (17) Pronotum distinctly broader than long. Less narrow species
11 (16) Frons behind interocular foveae with two small oval impressions
12 (13) Narrower, elytra slightly broader than pronotum (EW: PW: 1.09). Smaller: 1.0 mm (FB: 0.5 mm). ♂: E (Fig. 35) ····· ***impressipennis*** sp. nov. [Amami-oshima Is.]
13 (12) Less narrow, elytra distinctly broader than pronotum (EW: PW ≈ 1.2). Larger: (FB:

0.55–0.65 mm)

14 (15) Elytra with a longitudinal posterolateral sulcus. 1.0–1.2 mm (FB: 0.55–0.60 mm). ♂: E (Fig. 36)· · · · · · · · · · · ***bifoveolifrons*** sp. nov. [Tokunoshima Is., Amami-oshima Is.]

15 (14) Elytra simple posterolaterally. 1.0–1.3 mm (FB: 0.60–0.65 mm). ♂: E (Fig. 24) · · · · · · · · · · · ***takaii*** sp. nov. [Amami-oshima Is.]

16 (11) Frons behind interocular pits simple. 1.0–1.2 mm (FB: 0.65 mm). ♂: E (Fig. 14) · · · · · · · · · · · *riukiuensis* Puthz [Okinawa-jima Is.]

17 (10) Pronotum about as broad as long. Elytra coarsely and densely punctate (Fig. 30). A very narrow species. 0.8–0.9 mm (FB: 0.45 mm). ♂: E (Fig. 37) · · · · · · · · · · · ***perexilis*** sp. nov. [Okinawa-jima Is.]

18 (9) Pronotum impunctate

19 (24) Brachypterous or apterous species

20 (23) Pronotum broader (PW: PL $>$ 1.10)

21 (22) Larger: 1.0–1.2 mm (FB: 0.6 mm). ♂: E (Fig. 21) · · · · · · ***iriomoteanus*** sp. nov. [Iriomote Is.]

22 (21) Smaller: 0.9-1.0 mm (FB: 0.5 mm). ♂: E (Fig. 38) · · · ***kumejimanus*** sp. nov. [Kume-jima Is.]

23 (20) Pronotum less broad (PW: PL $<$ 1.10) (fig. x). 1.0–1.2 mm (FB: 0.55–0.6 mm). ♂: E (Fig.39) · · · · · · · · · · · ***yonaguniensis*** sp. nov. [Yonaguni Is.]

24 (19) Macropterous species

25 (26) Frons behind interocular pits with two small oval impressions · · · · · · · · · · · ***bifoveolifrons*** sp. nov. [see 14 (15)]

26 (25) Frons behind interocular pits simple

27 (30) Elongation of mediobasal carina of pronotum shorter, distance between anterior margin of the pronotum and anterior end of mediobasal carina exceeding the length of one eye (in dorsal aspect)

28 (29) Elytra dark brown with lighter shoulders; temples shorter. 1.1–1.3 mm (FB 0.65 mm). ♂: unknown. · · · · · · · · · · · ***fuscipennis*** sp. nov. [Iriomote Is.]

29 (28) Elytra brownish; temples longer. 1.0–1.2 mm (FB: 0.60–0.65 mm). ♂: E (Fig. 45) · · · · · · · · · · · ***tokaraensis*** sp. nov. [Tokara Isls.]

30 (27) Elongation of mediobasal carina of pronotum longer, distince between anterior margin of the pronotum and anterior end of elongated mediobasal carina less than the length of one eye (in dorsal aspect)

31 (32) Mediobasal carina of pronotum line-like elongated anteriad. 1.1–1.3 mm (FB: 0.7 mm). ♂: E (Fig. 22) · · · · · · · · · · · ***bannadakemontis*** sp. nov. [Ishigaki Is.]

32 (31) Mediobasal carina of pronotum Y-shaped broadened anteriorly. 1.2–1.4 mm (FB: 0.7 mm). ♂: E (Fig. 15) · · · · · · · · · · · ***ishigakiensis*** sp. nov. [Ishigaki Is.]

33 (8) Laterobasal carinae of pronotum not elongated anteriad

34 (37) Pronotum impunctate

35 (36) Larger. Elytra longer (EL: EW: 0.88). 1.2–1.4 mm (FB: 0.8 mm). ♂ unknown. · · · · · · · · · · · *Edaphus* sp. a [Okinawa-jima Is.]

36 (35) Smaller. Elytra shorter (EL: EW: 0.78). 1.1–1.3 mm (FB: 0.6 mm). ♂ unknown · · · · · · · · · · · *Edaphus* sp. b [Kagoshima Pref.: ??Is. de Noerabu, 20. VII. 1990, H. Makihara (NSMT)]

37 (34) Pronotum punctate

38 (39) Larger: FB: 0.7 mm. Pronotum broader (PW: PL: 1.23), sides strongly concave posteriorly. 1.1.–1.3 mm. ♂: E (Fig. 48) · · · · · · · · · · · ***diversipunctatus*** sp. nov. [Okinawa Pref.: Iriomote Is.: Otomi, 21. IV. 1993, H. Kojima (NSMT)]

39 (38) Smaller: FB: 0.45–0.5 mm. Pronotum less broad (PW: PL: 1.13), sides slightly concave

posteriorly. 0.8–1.0 mm. ♂: unknown ····· ***omotomontis*** sp. nov. [Ishigaki Is.]

40 (5) Mediobasal carina of pronotum short

41 (46) Pronotum punctate

42 (45) Elytra punctate. Smaller species: FB≤0.6 mm

43 (44) Macropterous. 1.0 mm (FB: 0.55 mm). ♂: unknown ····· ***mezentius*** sp. nov. [Amami-oshima Is.]

44 (43) Apterous

45 (46) Punctation of pronotum coarse, very dense, punctures distinctly delimited. 1.0–1.1 mm (FB: 0.5 mm). ♂: E (Fig. 12) ····· ***sergestus*** sp. nov. [Tokunoshima Is.]

46 (45) Punctation of pronotum very dense, coalescent. 1.0–1.2 mm (FB: 0.5–0.55 mm). ♂: E (Fig. 13) ····· ***silvius*** sp. nov. [Okinawa-jima Is., Amami-oshima Is.]

45 (42) Elytra impunctate. Larger species: FB≥0.6 mm. ♂: E (Fig. 25) ····· *nomurai* Puthz [Ishigaki Is., Iriomote Is., ?Amami-oshima Is.; Taiwan]

46 (41) Pronotum impunctate

47 (48) Lateral portions of frons callus-like elevated posteriorly. Larger: FB: 0.8 mm, pronotum broader (PW: PL≥1.18). 1.4–1.7 mm. ♂: E (Fig. 50) ····· ***callosifrons*** sp. nov. [Ishigaki Is.]

48 (47) Lateral portions of frons not callus-like elevated posteriorly. Smaller species: FB≤0.7 mm, pronotum less broad (PW: PL≈1.15)

49 (52) Elytra shorter (EL: EW≤0.81/0.82)

50 (51) Mediobasal foveae of pronotum 2× as long as wide. 1.1–1.5 mm (FB 0.6–0.65 mm). ♂: E (Fig. 49) ····· ***ogatai*** sp. nov. [Yonaguni Is.]

51 (50) Mediobasal foveae of pronotum 4×–5× as long as wide. 1.1–1.3 mm (FB: 0.7 mm). ♂: E (Fig. 54) ····· ***kojimai*** sp. nov. [Hateruma Is.]

52 (49) Elytra longer (EL: EW≥0.95). 1.0–1.2 mm (FB: 0.65 mm). ♂: E (fig. 23) ····· ***perdifficilis*** sp. nov. [Ishigaki Is.]

Acknowledgement

I would like to thank Dr. Shûhei Nomura (Tokyo), Dr. Shun-Ichiro Naomi (Chiba) and Mr. Stanislav Vít (Geneva) for providing the material treated here and for various help. My thanks are also due to Prof. Dr. Oliver Betz (Tübingen) and Mr. K. H. Helmer for the REM-photographs.

References

Bernhauer, M. 1907. Zur Staphyliniden-Fauna von Japan. Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien, 57: 371–414.

Puthz, V. 1975. Revision der paläarktischen *Edaphus*-Species (Coleoptera: Staphylinidae). Entomologica Germanica, 1: 170–184.

Puthz, V. 1979. Die vorder- und hinterindischen Arten der Gattung *Edaphus* Motschulsky (Coleoptera, Staphylinidae). Annales historico-naturales Musei Nationalis Hungarici, 71: 107–160.

Puthz, V. 1980. Beiträge zur Kenntnis der Euaesthetinen XXXI Vier neue *Edaphus*-Arten aus Japan (Staphylinidae, Coleoptera). Philippia, 4: 241–245.

Puthz, V. 1994. Beiträge zur Kenntnis der Euaesthetinen LXXIII Bemerkungen über die altweltlichen *Euaesthetus*-Arten (Staphylinidae, Coleoptera). Philippia, 6: 389–396.

Puthz, V. 2010. *Edaphus* aus Taiwan (Coleoptera, Staphylinidae) 101. Beitrag zur Kenntnis der Euaesthetinen. Revue suisse de Zoologie, 116: 265–336.

Sharp, D. 1889. The Staphylinidae of Japan. Annals and Magazine of Natural History, (6)3: 319–334.