A new genus and four new species of mites from Argentina, Brazil and Nicaragua
(Acari: Prostigmata: Erythraeidae, Eutrombidiidae)

RYSZARD HAITLINGER
Department of Zoology and Ecology, Agricultural University, Kożuchowska 5b, 51-631 Wrocław, Poland; e-mail: rhait@ozi.ar.wroc.pl

ABSTRACT. Fozustium paranensis n. gen., n. sp. from Brazil, Balaustium brunoni n. sp. (Erythraeidae), Eutrombidium fortunatae n. sp. both from Argentina and E. carazoense n. sp. from Nicaragua (Eutrombidiidae), all from larval instar are described.

Key words: acarology, taxonomy, Erythraeidae, Eutrombidiidae, Fozustium, Balaustium, Eutrombidium, new genus, new species, Argentina, Brazil, Nicaragua.

INTRODUCTION

In South, Central and North America in the subfamily Balaustiinae (Erythraeidae) only five species based on larvae were known hitherto: Balaustium kendalii Welbourn from USA, B. putmani Smiley from Canada, B. medardi Haitlinger from Peru, B. soydani Haitlinger from Guatemala and B. minodorae Haitlinger from Mexico. Moreover, B. obtusum Trägårdh from Juan Fernandez Isl. based on adults was noted (Trägårdh 1931, Smiley 1968, Welbourn & Jennings 1991, Haitlinger 2000a, b). In this paper new species of Balaustium and Fozustium n. gen., n. sp. are described.

In the family Eutrombidiidae from South, Central and North America only three species, based on larvae, were known hitherto: Eutrombidium orientale Southcott from Canada and USA, E. occidentale Southcott, E. centrale Southcott and Verdunella lockleii (Welbourn & Young) all from USA (Welbourn & Young 1988, Southcott 1993). In this paper two new species from Argentina and Nicaragua are described.
MATERIAL AND METHODS

Balaustiniid mites were obtained from herbaceous plants. *Fozaustium paranensis* n. gen., n. sp. was obtained in the vicinity of Foz do Iguacu (Brazil) in April 2003 and *Balaustium brunoni* n. sp. was obtained in Buenos Aires (Argentina) in March 2003. Eutrombidiid mites were obtained: *Eutrombium carazoense* n. sp. in La Boquita n. Carazo (Nicaragua) in February 1998 from undetermined Gryllidae (Orthoptera) and *E. fortunatae* n. sp. in Bariloche (Argentina) in March 2003 from undetermined Apidae. All specimens were preserved in ethanol and mounted later in Berlese’s medium. Holotypes of the new species are deposited in the Museum of Natural History, Wroclaw University (MNHWU), Poland.

Measurements below are expressed in micrometers (µm). Abbreviations used in the text are explained in *Southcott* (1993) and *Haitlinger* (2000 b, 2003).

**Erythraeidae Robineau-Desvoidy, 1828**

**Balaustiinae Grandjean, 1947**

**Balaustium von Heyden, 1826**

**Balaustium brunoni** n. sp.

**ETYMOLOGY**

The name has been derived from the name Brunon.

**DIAGNOSIS**

Bf 4-4-3, Tr 3-3-2, Ti 13-11-11, number of dorsal setae ~77, ISD 46-58, AL 22, Tal 60, Til 68-74.

**DESCRIPTION**

Larva. Dorsum of idiosoma with ~77 slightly barbed setae, eyes present (fig. 1). Dorsal scutum with AL /ML<PL, all barbed. AM and S barbed distally (fig 3).

Ventral surface of idiosoma with sternalae 1a and 2a, ~21 setae between coxae II-III and behind coxae III 36 setae, all nude excluding posterior setae of opisthosoma. Coxalae I-III ?nude (fig. 2). NDV = ~113.

Gnathosoma relatively short, deformed. Hypostomalae invisible, galealae present. Palptrochanter and palpfemur, each with one barbed seta. Palpgenu with 4 setae, one is nude. Palptibia with 2 nude setae (fig. 4). Palptarsus with 6 nude setae (with solenidion and eupathidium) (fig. 5). Palpal setal formula B-B-BBB-N-N.

Leg lengths (with coxa, without claws) I 358 holotype, 394 paratype; II 334, 308; III 372, 352. IP = 1064, 1054.

Setal formula. Leg I. Ta 1ω, 2ζ, 19, Ti 2ϕ, 1κ, 13, Ge 1σ, 1κ, 8, Tf 5, Bf 4, Tr 3, Cx 1 (fig. 6).

Leg II. Ta 1ω, 2ζ, 17, Ti 2ϕ, 11, Ge 1κ, 8; Tf 5; Bf 4; Tr 3; Cx 1 (fig. 7).

Leg III. Ta 1ζ, 19; Ti 1φ, 11; Ge 8; Tf 5; Bf 3; Tr 2; Cx 1 (fig. 8).
1-8. *Balaustium brunoni*: 1 - idiosoma, dorsal view, 2 - idiosoma, ventral view, 3 - scutum (paratype), 4 - palp, 5 - palptarsus, 6 - leg I, tarsus-coxa, 7 - leg II, tarsus-coxa, 8 - leg III, tarsus-coxa
Metric data are given in Table 1.

Table 1. Metric data for *Fozustium paranensis* n. gen. and n. sp., and *Balaustium brunoni* n. sp.

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Abbreviations: 1b* proximal seta, 1b** distal seta.

**Types**

Holotype: ARGENTINA, 7 III 2003, from herbaceous plants; leg. R. HAITLINGER (preserved in the Museum of Natural History, Wroclaw University). Holotype deposited in MNHWU; one paratype: same data as holotype, preserved in author’s collection.

**Remarks**

differs in Ti setae formula 13-11-11 vs 11-11-10, GeI with 1σ, 1κ, 8 vs 1σ, 9, TiII
with 2φ vs 1φ, 1κ, GeII with κ, shorter IP (1054-1064 vs 1112) and 1a (42 vs 54); from *B. minodoraee* in shorter AL (22 vs 28-32), PL (32-36 vs 46-48), AM (36 vs 48-54), GL (94-104 - 110-118), fD (77 vs 88) and fV (36 vs 62); from *B. medardi*

in shorter AW (28-34 vs 36-42), AL (22 vs 32-46), PL (32-36 vs 42-52), GL (94-104 vs 122-130), ISD (46-58 vs 64-74), Tal (60 vs 70-80) and Til (68-74 vs 80-102); from *B. kacperi*
in shorter AW (28-34 vs 50), PW (36-44 vs 62), AL (22 vs 40), PL (32-36 vs 44), ISD (46-58 vs 80), GL (94-104 vs 136) and Tal (60 vs 86); from *B. rajmundi*
in shorter AW (28-34 vs 54), ISD (46-58 vs 64) and the presence of scutum; from *B. nikae* in longer PL (32-36 vs 24-30), Til (68-74 vs 56-66), fD (77 vs 53) and Gel with 2φ; from *B. wratislaviensis* in shorter AP (24-26 vs 38-40), GL (94-104 vs 108-120), Til (68-74 vs 78-86), fV (36 vs 56); from *B. zhangi* in shorter PW (36-44 vs 56-63), AP (24-26 vs 33-37), longer PL (32-36 vs 27-31), formula of Bf (4-4-3 vs 4-4-2) and formula of Tr (3-3-3 vs 3-3-2); from *B. florale* in shorter MW (26-28 vs 36-44), PW (36-44 vs 66-84), longer ML (26-28 vs 16-20), PL (32-36 vs 20-24), GL (94-104 vs 74-92) and Til (68-74 vs 54-62); from *B. kendalli* in shorter AM (36 vs 45-53), AL (22 vs 26-32), AW (28-34 vs 37-42), ISD (46-58 vs 57-66) and leg III (352-372 vs 381-425).

**Fozustium n. gen.**

**Diagnosis**

fnCx 2-2-2, fnTr 2-2-2, pedotarsalae 3-3-3 without pulviliform rod, palp with
3 palpfemoralae, 2 palpgenualae and 2 palptibialae, palp claw divergent, lack of
scutum, setae ML and 1a. Gender: masculine.

Type species: *Fozustium paranensis* n. sp.

**Remarks**

In the subfamily Balaustiinae 7 genera were known: *Balaustium* von Heyden, 1826, *Myopongia* Southcott, 1961, *Pollux* Southcott, 1961, *Bursaustium* HAITLINGER, 2000, *Palenqustium* HAITLINGER, 2000, *Guatustium* HAITLINGER, 2000 and *Italustium* HAITLINGER, 2000 (SOUTHcott 1961, HAITLINGER 2000a, b). The new genus *Fozustium* differs from all these genera in fnCx 2-2-2, 3 palpfemoralae (excluding *Pollux*), bifurcate palp claw and fnTr 2-2-2 (excluding *Italustium*). Moreover, from *Pollux* it differs in 2 palpgenualae (vs 5) and 2 tibialae (vs 3).

**Fozustium paranensis n. sp.**

**Etymology**

Named after the type locality, State of Parana.
NEW GENUS AND FOUR NEW SPECIES OF MITES

DIAGNOSIS
With the features mentioned in the diagnosis for the genus and DS 36-94, PL 74, Tal 64, TiIII 88.

DESCRIPTION
Larva. Idiosoma longer than wide with ~68 nude setae, excluding the longest posterior setae that are weakly barbed. Eyes present (fig. 9). Scutum lacking, AL<PL, all nude, lacking setae ML. Sensillae S long, nude (AM damaged). At bases of setae AM surrounding line (fig. 11).

Idiosoma ventrally without setae 1a, between coxae II and III ~37 setae, beyond coxae III ~26 posteriorly long setae, all nude. Coxae I -III, each with two nude setae, subequal in length (fig. 10).

Gnathosoma short with nude hypostomalae and nude galealae (fig. 12). Palp with 3 palpfemoralae (one barbed), 2 palp genualae (one barbed) and 2 nude palptibialae (fig. 13). Palptarsus with seven setae (with solenidion and ζ) (fig. 14). Palpal setal formula fPp O-2N, 1B-1N, 1B-2N-7N. Palpal tibial claws bifurcate without median tooth (fig. 13).

Leg setal formula. Leg I. Ta 1ω, 1ζ, 17, Ti 2ϕ, 19, Ge 1σ, 15, Tf 7, Bf 5, Tr 2, Cx 2 (fig. 15).
Leg II. Ta 1ω, 1ζ, 15, Ti 2ϕ, 20, Ge 1σ, 15, Tf 7, Bf 5, Tr 2, Cx 1 (fig. 16).
Leg III. Ta 16, Ti 19, Ge 1σ, 15, Tf 7, Bf 5, Tr 2, Cx 1 (fig. 17).
Metric data are given in Table 1.

TYPES
Holotype: BRAZIL, vicinity of Foz do Iguacu, 8 III 2003, from herbaceous plants; leg R. HAITLINGER (preserved in MNHWU).

Eutrombidiidae THOR, 1935
Eutrombidium VERDUN, 1909

Eutrombidium fortunatae n. sp.

ETYMOLOGY
The name of the species has been derived from the name Fortunata.

DIAGNOSIS
Lateral pygosomal seta (LPS) 80, AW 108, AW/AA 1.80, SA/SP 1.45, HS/PLN 4.75.

DESCRIPTION
Larva. Idiosoma elongate; dorsum with 17 ?nude setae. Eyes placed far from scutum (fig. 18). Scutum punctate with rounded anterior border and slightly
concave posterior border. Scutalae AL longer than PL, AM and S thin, all these setae bare (fig. 20). Scutellum oval, punctate with two bare setae placed at its anterior margin (fig. 21).

Ventral surface of idiosoma with two setae 3a, beyond coxae III with 12 nude setae. Anus placed in medial part of opisthosoma. Distal coxal I and coxalae II-III, each with divergent distal part. Proximal coxala I thin and nude (fig. 19).

Gnathosoma hardly visible; conical hypostomalae, sclerotised oral „ring” present; palptarsus has long and thin seta (the other setae invisible).

Leg lengths (with coxa, without claws). I 278, II damaged, III 254.

Leg setal formula. Leg I. Ta 1ω, 1ζ, 17; Ti 2φ, 6; Ge 2σ, 4; Fe 6; Tr 1 (fig. 22).

Leg II damaged. Leg III. Ta 10; Ti 4; Ge 1σ, 2; Fe 4; Tr 1 (fig. 23). Tarsus III with bare roxala 26 μm long, dumala bears 3 long setules and two short setules, cultanala with short setules.

Metric data are given in Table 2.

Table 2. Metric data for Eutrombidium fortunatae n. sp. and E. carazoense n. sp.

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Abbreviations: 1b* proximal seta, 1b** distal seta.

Types

Holotype: ARGENTINA, Bariloche, 21 II 2003, from undetermined Apidae; leg. R. HAITLINGER (preserved in MNHWU).
Remarks

_E. fortunatae_ n. sp. belongs to the species group without deeply cleft coxalae with unequal lobes. To this group belong _E. feldmanmuhsamae_ Feider, _E. orientale_ Southcott, _E. africanaum_ Southcott, _E. trigonium_ (Hermann), _E. indicum_ Southcott, _E. occidentale_ Southcott, _E. verdense_ Southcott, _E. centrale_ Southcott, _E. australiense_ Southcott, _E. robauxi_ Southcott, _E. macfarlanei_ Southcott and _E. sorbasiensis_ Mayoral & Barranco (Feider 1977, Southcott

1993, Mayoral & Barranco 2004). It differs from _E. feldmanmuhsamae_ in the lack of lanceolate AL scutalae, fnFe (6 vs 5), lacking microseta κ, longer PW (130 vs 90), SB (94 vs 68-73) and AL (48 vs 23-24); from _E. orientale_ in shorter L (116 vs 120-145), MA (42 vs 50-66), leg I (278 vs 315), leg III (254 vs 300), SA/SP (1.36 vs 1.48-1.78), roxala on TaIII nude (setulose in _E. orientale_), scutum and scutellum punctate (vs not punctate) and shape of scutum (in _E. orientale_ constricted before posterior angles of scutum); from _E. africanum_ in punctate scutum and scutellum, shorter leg I (278 vs 350) and leg III (254 vs 350); from _E. trigonum_ in shorter L (116 vs 124-145), ASB (94 vs 100-119), SA/SP (<1.5 vs >1.5); from _E. indicum_ in longer PW (130 vs 104-106), SB (94 vs 77-79), W (140 vs 122-125), SA (32 vs 24-25), AL (48 vs 36-38) and shorter MA (42 vs 57); from _E. occidentale_ in longer PW (130 vs 114-117), shorter MA (42 vs 54), ASB (94 vs 105), SA/SP (1.45 vs 1.26-1.40) and dumala with long setules (in _E. occidentale_ short setules); from _E. australiense_ in longer PW (130 vs 119-124), shorter ASB (94 vs 106-111), LPS (80 vs 91-98), AM (38 vs 47), QL (36 vs 55-57) and punctate scutum and scutellum; from _E. centrale_ in longer PW (130 vs 92-104), W (140 vs 110-120), SB (94 vs 70-82) and LPS (80 vs 63-72); from _E. australiense_ in shorter AW (108 vs 71-87), PW (130 vs 88-100), W (140 vs 95-113), TaI (74 vs 56-67) and lack of reticular pattern; from _E. robauxi_ in shorter MA (42 vs 54-57), longer AW (108 vs 84-97), PW (130 vs 90-98), SB (94 vs 63-72), W (140 vs 102-116), AL (48 vs 29-38) and fD (18 vs 26); from _E. macfarlanei_ in the lack of reticular pattern on scutum and scutellum, longer AW (108 vs 91), PW (130 vs 98), SB (94 vs 75), W (140 vs 110), AL (48 vs 36) and shorter LPS (80 vs 96) and from _E. sorbasienasis_ in shorter MA (42 vs 50-65), longer PW (130 vs 88-105), W (140 vs 98-123), AL (48 vs 28-35), LSS (134 vs 105-115) and not lanceolate AL and PL. Species of the genus _Eutrombidium_ are associated with various species of Orthoptera. The presence of this species in Apidae is unusual.

**Eutrombidium carazoense n. sp.**

**ETYMOLOGY**
Named after the type locality, town Carazo.

**DIAGNOSIS**
Idiosoma oval, AW<SB, coxalae deeply cleft with unequally bifurcate lobes, nfFe 5-4-4, nfTi 5-5-5, AL 38-46, PL 26-28.

**DESCRIPTION**
Larva. Idiosoma longer than wide. Dorsum of idiosoma ornamented with 14 slightly barbed setae; anterior setae are longer than posterior setae. Eyes placed near scutum (fig. 24). Scutum punctate, with anterior border rounded and anterolateral lobes with lines. Posterior border weakly concave. Scutalae AL barbed, longer and thicker than nude scutalae PL. Anterior sensillae AM and posterior
sensillae S, both short and nude (fig. 26). Scutellum oval, punctate, with two nude setae; their bases placed at the anterior border of scutellum (fig. 27).

Ventral surface of idiosoma with sternalae 3a and behind coxa III with 14 weakly barbed setae. Posterior setae about three times longer than anterior setae. Anus placed in the middle of opisthosoma. Distal coxala I and coxalae II-III, all deeply cleft with unequally bifurcate lobes; proximal coxala I thin and nude, close to border of coxa (fig. 25).

Gnathosoma very slightly visible, setae scl conical.

Leg lengths (with coxa, without claws) I 248 holotype, 244-256 paratypes, II 236, 226-234, III 228, 224-240. Ip = 712 holotype, 704-720.

Setal formula. Leg I. Ta 1, 10; Ti 2, 5; Ge 1, 2; Fe 5; Tr 1 (fig. 28).
Leg II. Ta 1, 8; Ti 5; Ge 1, 2; Fe 4; Tr 1 (fig. 29).
Leg III. Ta 8; Ti 5; Ge 1, 2; Fe 4; Tr 1 (fig. 30).

Metric data are given in Table 2.

**Types**

Holotype: NICARAGUA, La Boquita n. Carazo, 16 II 1998, from undetermined Gryllidae (Orthoptera); paratypes: 3 larvae, same data as holotype, all from wings; leg. R. Haitlinger (preserved in MNHWU, paratypes in author’s collection).

**Remarks**

*E. carazoense* n. sp. belongs to the species group with deeply cleft coxalae, with unequally bifurcate lobes. To this group belong *E. mossadeghi* SABOORI & NEMATI, *E. sepasgosariani* SABOORI, NEMATI & MOSSADEGH and *E. mbuensis* HAITLINGER (SABOORI, NEMATI & MOSSADEGH 2000, SABOORI & NEMATI 2001, HAITLINGER 2003). It differs from *E. mossadeghi* in shorter AW (70-80 vs 105-109), PW (104-120 vs 135-143), SB (90-92 vs 102-106), LPS (62-68 vs 153) and Tal (62-68 vs 104-109); from *E. sepasgosariani* in longer PW (104-120 vs 99-102), SB (90-92 vs 72-74), LPS (62-68 vs 38-44), fD (14 vs 22), fV (14 vs 10) and from *E. mbuensis* in longer PW (104-120 vs 102), SB (90-92 vs 78) and shorter PL (26-28, nude vs 48, pilose). From all above-mentioned species it differs in nfFe 5-4-4 and nfTi 5-5-5.

**REFERENCES**


