

New Neotropical Species of the Genus *Frankliniella* Karny (Insecta: Thysanoptera: Thripidae)

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Abstract

Four new species of the genus *Frankliniella* Karny are described, two from Chile, *F. rahakana* sp. n. and *F. otites* sp. n.; one from Costa Rica, *F. senckenbergiana* sp. n. and one from Argentina, *F. amigoi* sp. n. *F. rahakana* sp. n. belongs to the 'intonsa group' and the other three to the 'minuta group' of *Frankliniella*.

Resumen

Se describen cuatro especies nuevas del género *Frankliniella* Karny, dos de ellas son chilenas, *Frankliniella rahakana* sp. n. y *Frankliniella otites* sp. n.; una de Costa Rica, *Frankliniella senckenbergiana* sp. n. y otra más de Argentina, *Frankliniella amigoi* sp. n. Una de las especies chilenas *F. rahakana* sp. n. se incluye en el 'grupo intonsa' y las tres restantes en el 'grupo minuta' del citado género de acuerdo con los datos de Sakimura & O'Neill (1979) y Retana & Mound (1995).

Keywords: Thysanoptera, *Frankliniella*, new species, Neotropical Region.

Introduction

The genus *Frankliniella* Karny is known as the most species-rich Thysanoptera genus found in the Nearctic and Neotropical regions. To the 159 species listed by Nakahara (1997), a further 28 species described more recently from Mexico (Johansen, 1998a, 1998b, 2000; Johansen & Mojica-Guzman, 1998), four species from Costa Rica (Retana, 1998), also one from Brazil (Nakahara & Monteiro, 1999) and a fossil species from deposits of Saxonian amber

(Schliephake, 1999) should be added. Approximately 96% of the species of *Frankliniella* come from the American continent, and it is not uncommon for new taxa to emerge in studies on thrips from South America, where the fauna has received much less attention than that of neighbouring countries to the North.

The species reported in this paper were collected by Dr. Javier Amigo and co-workers in 1998 and 2000. At that time, those authors were studying rain forest plant communities in the southern third of Chile, in particular in the city of Valdivia and its surroundings, but also in some localities of the Argentinean on border at the same latitude. The Costa Rican species described here came from the collection of the Senckenberg Museum, Frankfurt-Main, Germany.

Every diagnosis is based on the bibliographic information from the compared species; studying the original descriptions, as well as some redescription that could exist.

Results

Frankliniella rahakana sp. n. (Figs. 1–4)

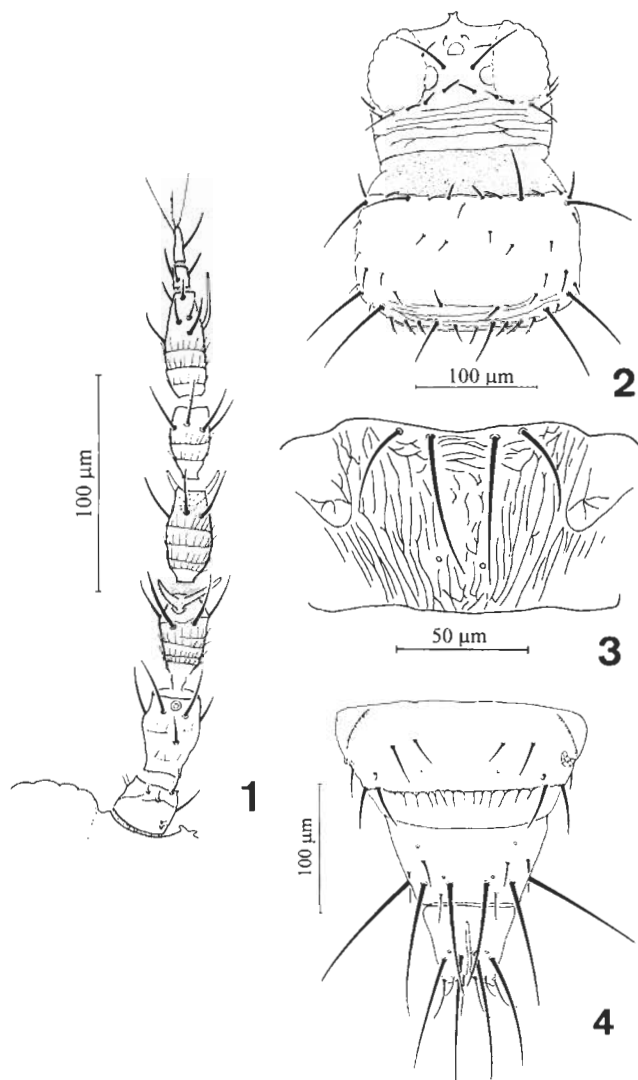
Description

♀, macropterous. Bicoloured. Head and pterothorax brown to pale brown; prothorax paler than head and pterothorax; fore wing pale yellow, without differentiation of basal area; legs generally brown-yellow, upper surface of femora darker; abdomen darker than head and thorax consistent with the above-mentioned bicoloured coloration, abdominal segments progressively darker towards posterior. Antennal segments I and III pale yellow or pale brown-yellow; segments II and

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Figs. 1–4. *Frankliniella rahakana* sp. n., ♂ paratype. (1) Left antenna dorsally; (2) head dorsally and pronotum; (3) metanotum; (4) abdominal segments VIII–X dorsally.

V–VIII brown, antennal segment II lighter distally; segment IV pale brown with basal third as in III.

Head 93–111 µm long, 144–155 µm wide (Fig. 2), with cheeks convergent to posterior; three pairs of ocellar setae, the interocular pair reaching 37–48 µm in length and their interval being 21–30 µm, located at position 3 of Retana and Mound (1994); six pairs of postocular setae, pair IV being the longest with 26–35 µm, postocular setae I present; vertex with five to six sculptural lines. Antenna 252–294 µm long (Fig. 1), with sense cones of segments III and IV forked, segment III with pedicel simple, and segment IV narrowed distally. Length (width) of antennal segments, segment III with pedicel, in µm: I 19–23 (26–30), II 32–38 (26–28), III 42–49 (21–24), IV 37–46 (19–23), V 30–37 (17–19), VI 44–51 (16–19), VII 9–12 (7–9) and VIII 14–19 (5–6).

Pronotum 102–125 µm long, 167–204 µm wide (Fig. 2), almost smooth with small tenuous sculptural lines at fore

angles and on anterior margin; pronotal area in anterior half with only three or four discal setae and in posterior half, almost submarginal, four-five pairs of 6–16 µm long discal setae, the longest pair being 17–26 µm and most laterally situated; anteromarginal setae 37–51 µm, anteroangular setae 51–70 µm, and two to three setae between the anteromarginal pair that reach 12–19 µm in length, respectively; posteroangular internal setae 60–86 µm and external 56–77 µm and five pairs of postermarginal setae, pair II being the longest 28–44 µm, respectively.

Mesonotum with transverse sculptural lines, laterally more oblique, with two campaniform sensilla on anterior margin; two pairs of postermarginal setae, central pair 12–15 µm and lateral pair 14–19 µm long. **Metanotum** (Fig. 3) with opened reticulation medially and closed laterally; four anteromarginal setae, the inner pair longer 49–63 µm than the outer pair with 28–39 µm.

Forewing 665–789 µm long, upper vein with 17–21 and lower vein with 11–18 setae, respectively; scale with five setae along the border and one in the discal area.

Abdomen with weak sculpture lines on tergites I–II throughout discal area and on tergites III–VIII anteriorly and laterally up the pair S1; tergite IV with ctenidia of some microtrichia until S2; tergite VIII (Fig. 4) with a complete comb of long microtrichia, 12–16 being broad-based. Abdominal segment IX 53–63 µm long (Fig. 4); discal setae 23–37 µm; setae S1, S2, and S3 77–104, 93–118 and 88–123 µm long, respectively. Abdominal segment X 51–65 µm long (Fig. 4), setae S1 and S2 95–116 and 74–104 µm long.

Total body length 1.241–1.595 µm (distended).

Type series

Holotype: ♀, Chile: Lago Ranco (between Futrono and Llifén), province of Valdivia, region of Los Lagos, 17.II.1998, on *Gevuina avellana* Mol. (Proteaceae), 130 m, J. Amigo, leg. **Paratypes:** 27 ♀♀, with the same data as holotype. 1 ♀ Aguas Calientes, National Park Puyehue, province of Osorno, region of Los Lagos, 16.I.1997, on *Myrceugenia planipes* (Hook et Arn.) Berg (Myrtaceae), 470 m. ♀ Colorado, province of Talca, region of Maule, 12.I.1998, on *Myrceugenia obtusa* (DC.) Berg (Myrtaceae), 850 m. 1 ♀ Volcán Choshuenco (west hillside), province of Valdivia, region of Los Lagos, 31.I.1998, on *Myrceugenia planipes* (Hook et Arn.) Berg. (Myrtaceae), 520 m. 2 ♀♀, Liquiñe-Coñaripe, province of Valdivia, region of Los Lagos, 1.II.1998, on *Eucryphia cordifolia* Cav. (Eucryphiaceae), 480 m. 2 ♀♀, Hueyusca, (coastal mountain chain), province of Osorno, region of Los Lagos, 18.II.1998, on *Myrceugenia planipes* (Hook et Arn.) Berg (Myrtaceae), 560 m. – 1 ♀ Curíñanco, province of Valdivia, region of Los Lagos, 9.I.2000, on *Myrceugenia planipes* (Hook et Arn.) Berg (Myrtaceae), 20 m. – 4 ♀♀, Corral – Valdivia, province of Valdivia, region of Los Lagos, 13.I.2000, on *Escallonia revoluta* (Ruiz and Pavón) Pers. (Saxifragaceae), 10 m, J. Amigo leg.

The holotype and most of the paratypes are deposited at the Department of Entomology of the Faculty of Biology of the Complutense University in Madrid. The remaining paratypes are deposited in the Forschungsinstitut Senckenberg, Frankfurt-Main, Germany.

Diagnosis

Frankliniella rahakana is similar to *F. xanthomelaena* Hood (1937) from Peru in that both of them have a bicoloured body. They can be distinguished as follows: body and antenna generally darker in the new species, for example, head and pterothorax brown to pale brown in *F. rahakana* (pale yellow in *F. xanthomelaena*) and antennal segments II and V brown in *F. rahakana* (yellow in *F. xanthomelaena*); interocellar setae 37–48 μm (53–72 μm); antennal segment III 42–49 μm (72 μm); setae of the pronotum, anteromarginal, anteroangular, posteroangular internal and external 37–51, 51–70, 60–86 and 56–77 μm (108, 110, 114 and 113 μm); also, large setae of abdominal segments IX and X are smaller in the new species than in *F. xanthomelaena*.

To a lesser extent, *F. rahakana* appears to be related to two pale-coloured species, one is *F. frumenti* Moulton (1948) from Chile and the other is *F. gemina* Bagnall (1919), from Paraguay and in Chile (see Nakahara, 1997). From *F. frumenti*, the new species can be distinguished by its bicoloured body (pale yellow body in *F. frumenti*); antennal segment II and V brown (pale); antennal segment III 42–49 μm (53 μm); and shorter major setae on abdominal segments IX and X. From *F. gemina*, the new species is distinguished by its bicoloured body (yellow body with darker thorax in *F. gemina*); interocellar setae 37–48 μm (18 μm); antennal segment III 42–49 μm (59–62 μm) and longer major pronotal setae.

Etymology

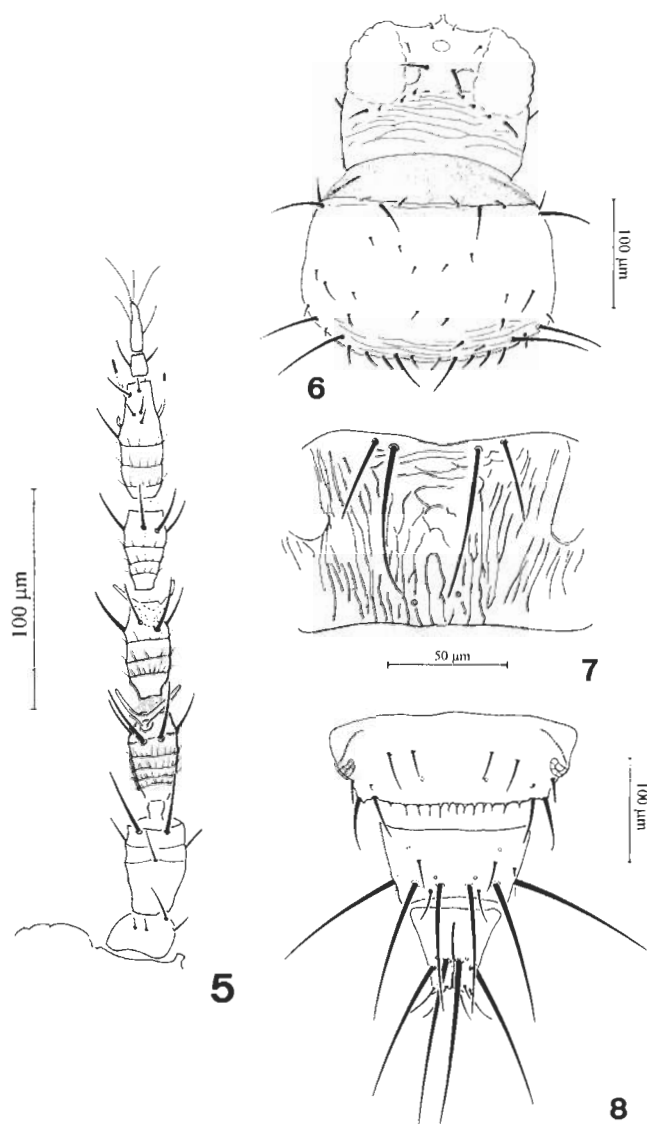
This species is named after Dr. Suelo Nakahara, as an acronym of his surname, for his extensive knowledge of *Frankliniella* and his permanent help to us as regards this genus.

Frankliniella amigoi sp. n. (Figs. 5–10)

Description

♀, macropterous. Coloration dark, body brown. Head, thorax and abdomen brown; fore wing dark throughout length; legs brown, fore tibia for the most part paler than middle and hind tibiae, tarsi pale brown. Antenna brown to dark brown; antennal segment II darker than the others, and segment III, at base, sometimes paler.

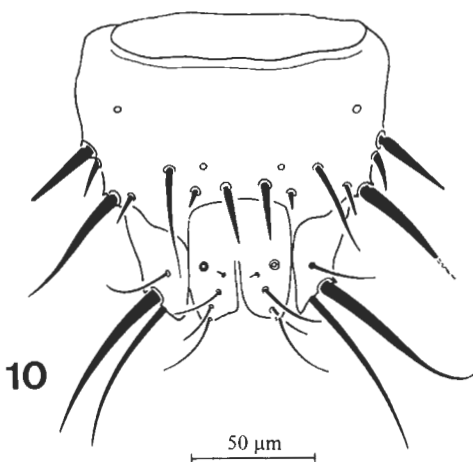
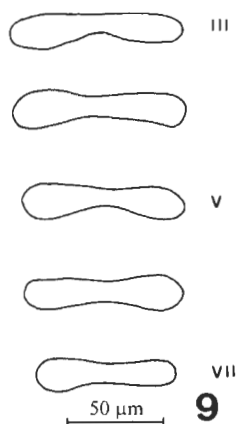
Head 100–139 μm long, 157–179 μm wide (Fig. 6) with convergent cheeks towards back; three pairs of ocellar setae, the interocellar setae 26–28 μm long located at position 3 or 2/3 (Retana & Mound, 1994) (1.3–1.5 times the longitudinal



Figs. 5–8. *Frankliniella amigoi* sp. n., ♀ paratype. (5) Left antenna dorsally; (6) head dorsally and pronotum; (7) metanotum; (8) abdominal segments VIII–X dorsally.

diameter of hind ocellus) and their interval reaches 16–21 μm ; six pairs of postocular setae, the pair IV 16–23 μm long, postocular setae I present; occiput with six to seven strong sculptural lines. Antenna 290–309 μm long (Fig. 5), antennal segment III with simple pedicel; segments III and IV with sense cones forked. Length (width) of antennal segments, segment III with pedicel, in μm : I 21–23 (30–32), II 37–41 (28–30), III 48–53 (21–23), IV 39–44 (19–21), V 32–37 (19–20), VI 49–56 (17–20), VII 9–12 (8–9) and VIII 17–21 (5–6).

Pronotum 128–155 μm long, 188–236 μm wide (Fig. 6), almost smooth with some sculptural lines, stronger at posterior margin and more tenuous along the anterior margin and fore angles; discal area in anterior half with three to seven



Figs. 9–10. *Frankliniella amigoi* sp. n., ♂ paratype. (9) Glandular areas of sternites III–VII; (10) abdominal segments IX–X dorsally.

setae and posterior half with five to seven pairs of discal setae, the longest pair is the most lateral one, 16–23 μm long, and remaining pairs reach 5–12 μm ; anteromarginal setae 21–32, anteroangular setae 41–58, and two setae between anteromarginal pair 9–14 μm , respectively; posteroangular internal setae 65–84, posteroangular external setae 53–79 and five pairs of posteromarginal setae, pair II being the longest with 30–39 μm , respectively.

Mesonotum with transverse sculptural lines, laterally more oblique, two campaniform sensilla, centred, on anterior margin; two pairs of posteromarginal setae, the inner pair 12–14 μm and the outer pair 14–19 μm long, respectively.

Metanotum (Fig. 7) with sculpture lines hardly visible medially and more distinct laterally; two pairs of anteromarginal setae, the central pair 55–72 μm and the lateral pair 35–39 μm long; a pair of campaniform sensilla on posterior third.

Forewing 770–885 μm long; upper vein with 18–22 and lower vein with 14–18 setae, respectively; scale with five setae along border and one seta on discal area.

Abdomen with tenuous sculptural lines throughout discal area of tergites I and II, in tergites III–VIII sculpture lines more distinct except in central and posterior area of tergites (from pair S1 until posterior margin); tergite IV with ctenidia present of scarce development and situated behind pair S2; tergite VIII with a complete comb of 9–13 microtrichia each with broad and spaced base (Fig. 8). Abdominal segment IX 65–74 μm long (Fig. 8), discal setae 26–29 μm , setae S1, S2 and S3 109–130, 131–147 and 136–158 μm long, respectively, with S3 > S2 > S1. Abdominal segment X 67–77 μm long (Fig. 8), setae S1 and S2 137–165 and 135–147 μm long, being S1 > S2.

Total body length 1.551–1.802 μm (distended).

♂: Colour and sculpture as in female but slightly clearer.

Head 81–100 μm long, 137–151 μm wide. Antenna 247–276 μm long; length (width) of antennal segments, segment III with pedicel, in μm : I 19–21 (28–30), II 32–36 (26–28), III 39–44 (20–21), IV 35–37 (19–20), V 28–32 (16–19), VI 44–49 (16–19), VII 7–9 (7–8) and VIII 14–19 (5–6).

Pronotum 111–130 μm long, 162–193 μm wide; anteromarginal setae 21–30, anteroangular setae 42–46, posteroangular internal setae 51–68, posteroangular external setae 42–56 μm and pair II of posteromarginal setae 26–35 μm , respectively. Forewing 589–713 μm long. Sternites III–VII with glandular areas (Fig. 9) and, exceptionally, in two paratypes also present on sternite VIII; length (width) of the glandular areas in μm : III 9–16 (60–93), IV 9–19 (60–93), V 9–19 (60–93), VI 12–19 (53–86), VII 12–16 (49–72) and VIII (only in two paratypes) 5–7 (10–26); tergite VIII with comb at the posterior margin of 8–20 microtrichia. Abdominal segment IX 60–74 μm long (Fig. 10); setae S1, S2 and S3 26, 50–60 and 32–42 μm long, respectively, discal setae 37–44 μm long. Abdominal segment X with falciform setae 70–86 μm long (Fig. 10).

Total body length 1.211–1.359 μm (distended).

Type series

Holotype: ♀, Argentina: Puerto Arturo (northern border of the lake Lolog), National Park of Lanín, province of Neuquén, 9.II.1998, on *Mutisia ilicifolia* Cav. (Asteraceae), 900 m, J. Amigo, leg. Paratypes: 6 ♀♀, 9 ♂♂ with the same data as holotype. 1 ♀, Lago Curruhue Chico, National Park of Lanín, province of Neuquén, 9.II.1998, on *Escallonia virgata* (Ruiz and Pavón) Pers. (Saxifragaceae), 1010 m. 1 ♀, 2 ♂♂, Lago Curruhue Chico, National Park of Lanín, province of Neuquén, 10.II.1998, on *Mutisia ilicifolia* Cav. (Asteraceae), 1010 m. 1 ♀, San Martín de los Andes, province of Neuquén, 11.II.1998, on *Mutisia ilicifolia* Cav. (Asteraceae), 1.050 m. All J. Amigo leg.

The holotype and most of the paratypes are deposited at the Department of Entomology of the Faculty of Biology of the Complutense University in Madrid. The remaining

paratypes are deposited in the Forschungsinstitut Senckenberg, Frankfurt-Main, Germany.

Diagnosis

This new species seems to fulfil two of the three requirements that Sakimura and O'Neill (1979) indicate to define the *F. minuta* species group: longest postocular setae (par IV) less than 20 µm; pronotal anteromarginal setae less than 30 µm. Likewise, these specimens fit the description, of this species group given by Retana and Mound (1994), in that the interocellar setae are less than twice the longitudinal diameter of hind ocellus. This new species lies within the upper limits of these criteria.

F. amigoi is similar to *Frankliniella vargasi* Retana and Mound (1994), from Costa Rica in the form of the pedicel of the antennal segment III, the position of the interocellar setae and the relationship of abdominal segments IX and X, and their major setae. They differ as follows: body dark brown in *F. amigoi* (light brown in *F. vargasi*), antenna dark brown (antennal segment III and base of IV yellow–pale brown), middle and hind tibiae brown (middle and hind tibiae bicoloured), pronotal anteromarginal, posteroangular internal and external setae 21–32, 65–84 and 53–79 µm (45, 60 and 45 µm); and setae S1 and S2 of the abdominal segment IX 109–130 and 131–147 µm (90 and 90 µm), among other differences.

Mound and Marullo (1996: 138, 156) suggested that *F. vargasi* might be the same species as the single known female of *F. floydandrei* Sakimura & O'Neill (1979). *Frankliniella amigoi* differs from the description of the holotype of this latter species as follows: antenna brown to dark-brown, legs brown, postocular setae pair I present, pronotal major setae of greater size. In contrast, the holotype of *F. floydandrei* is described as having: antennal segments III–V mainly yellow, legs as a rule yellow, postocular setae I absent and pronotal major setae of smaller size.

Finally, *F. serrata* Moulton (1933) from Brazil shares with the new species its body colour and the relationship of the abdominal segments X/IX. Despite this, the size of the body, the number of postocular setae and pair S2 of the abdominal tergite IV, clearly separates them.

Etymology

This species is dedicated to Dr. Javier Amigo because of his constancy and tenacity in the sampling of the Chilean thrips.

Frankliniella senckenbergiana sp. n. (Figs. 11–14)

Description

♀, macropterous. Brown coloration. Head, thorax and abdomen brown; fore wing brown with the base more or less light; legs with the trochanters and base of femurs pale yellow or pale, the rest of femurs brown, fore tibia and all

tarsi yellow–pale brown, sometimes fore tibiae somewhat darker, middle and hind tibiae bicoloured, brown with at least the distal extreme lighter. Bicoloured antenna, segments I–II and VII–VIII brown, segment II being darker than the rest; whole length of antennal segment III, basal two-thirds of segment IV and basal halves of segments V and VI yellow (pale); antennal segment IV in distal third, distal half of segment V and distal half or two-thirds of segment VI light-brown.

Head 111 µm long, 158 µm wide (Fig. 12), cheeks convergent towards back; three pairs of ocellar setae, interocellar setae 30–37 µm (1.6–1.9 times the longitudinal diameter of hind ocellus) and interval 23–27 µm long, respectively, being located at position 3 or 3/4 according to Retana and Mound (1994); six pairs of postocular setae, pair IV the longest, 23–27 µm, pair I of postocular setae present; occiput with noticeable sculptural lines. Antennal segments III and IV (Fig. 11) with sense cones forked, segment III with pedicel simple. Length (width) of some antennal segments in µm, segment III with pedicel: III 44–46 (26), IV 44–46 (23), V 35 (19), VI 46–49 (19), VII 9–10 (7–8) and VIII 13 (6).

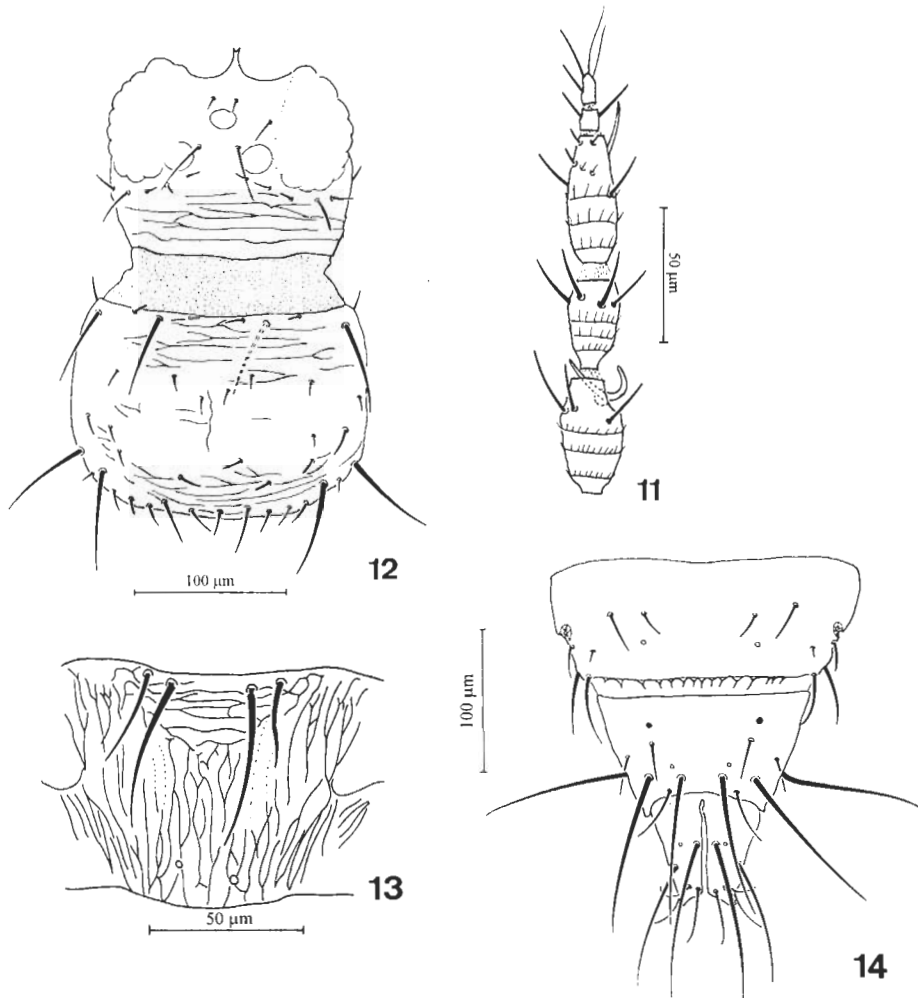
Pronotum 130–135 µm long, 186–193 µm wide (Fig. 12) with sculptural lines at anterior and posterior margin and a stronger one, vertically, in centre; pronotal area on anterior half with four or five pairs of discal setae and in posterior half with five to six pairs reaching 7–16 µm in length, and longest pair of lateral position 22–23 µm long; anteromarginal setae 53–56 µm, anteroangular setae 60–61 µm, and two small setae between the anteromarginal setae that reach 14–16 µm, respectively; posteroangular internal setae 53–72 µm, posteroangular external setae 51–65 µm and five pairs of posteromarginal setae, pair II being longer 28–32 µm, respectively.

Mesonotum with transverse sculptural lines, two campaniform sensilla, centred, near anterior margin; two pairs of posteromarginal setae, both 19 µm long. Metanotum (Fig. 13), laterally, with vertical sculptural lines and in middle with transverse lines on the anterior third and polygonal cells extended in the rest; two pairs of anteromarginal setae, inner pair 56–58 µm and outer pair 32–40 µm long, respectively; one pair of campaniform sensilla on posterior third of metanotal area.

Forewing 665–703 µm long, upper vein with 20–22 and lower vein with 14–19 setae, respectively; scale with five setae along border and one in discal area.

Abdomen with not very distinct sculptural lines; tergite IV with ctenidia up to pair S2 (in one paratype only developed at left side); tergite VIII with complete comb of 13–15 microtrichia with broad and spaced base, at posterior margin (Fig. 14). Abdominal segment IX 67–74 µm long (Fig. 14), discal setae 23–26 µm, setae S1, S2 and S3 97–104, 100–109 and 97–102 µm in length, respectively; with S2 > S1 = S3. Abdominal segment X 70 µm long (Fig. 14), setae S1 and S2 102–111 and 93–95 µm long, respectively; with S1 > S2.

Total body length 1.374–1.403 mm (not distended).



Figs. 11–14. *Frankliniella senckenbergiana* sp. n., ♀ (11) Antennal segments IV–VIII laterally, paratype; (12) head dorsally and pronotum, paratype; (13) metanotum, paratype; (14) abdominal segments VIII–X dorsally, type.

Type series

Holotype: ♀, Costa Rica: Finca La Gloria, province of Alajuela, 26.I.1976, on blooms of *Verbena* sp. (Verbenaceae), E. Klein leg. (SMF T 7290). Paratypes: 3 ♀♀ with the same data as holotype.

The holotype and paratypes are deposited in the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt-Main, Germany.

Diagnosis

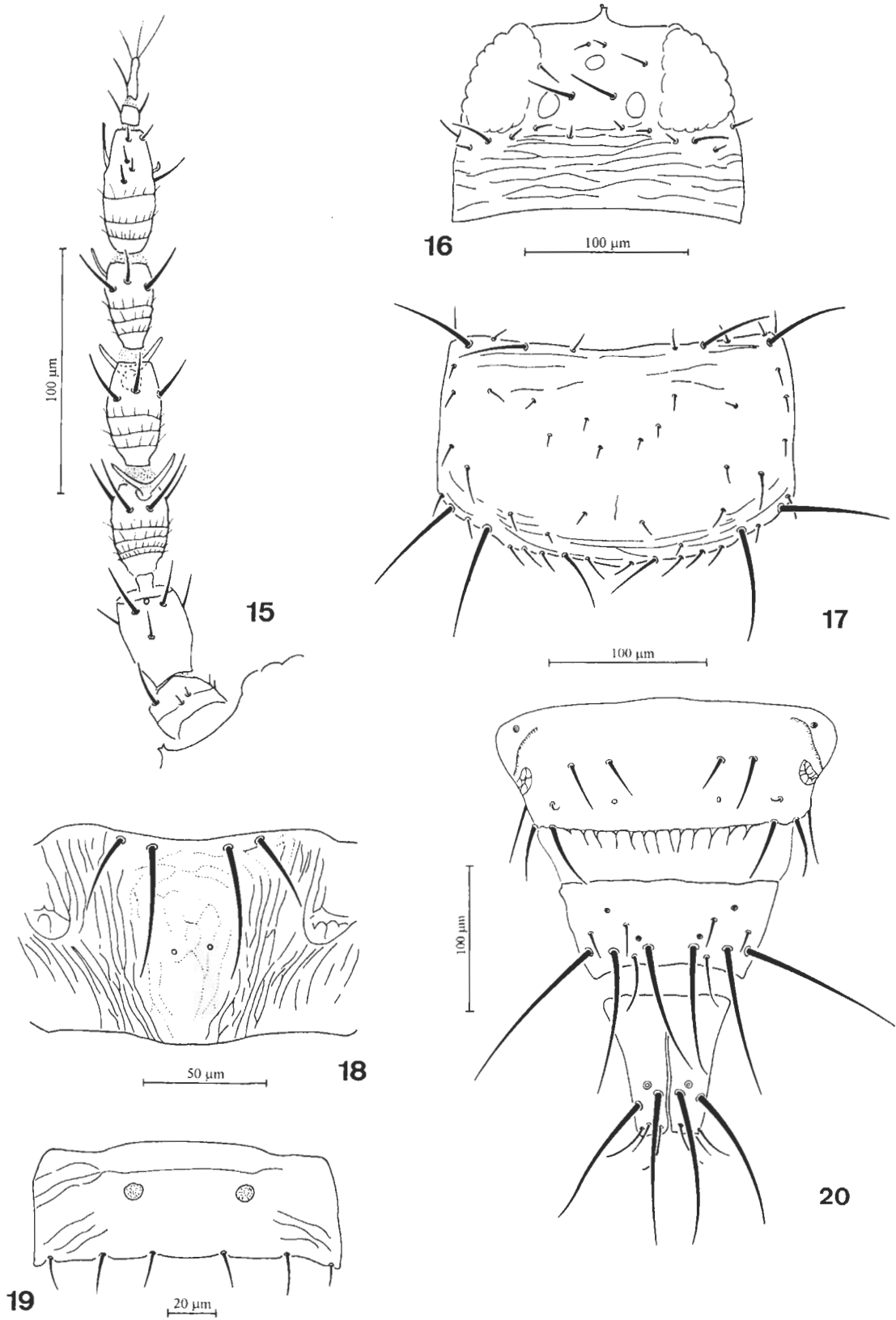
Following the description of *F. vargasi*, Retana and Mound (1994) mentioned the specimens described here and stated 'these may represent another species'. The most meaningful differences between *F. senckenbergiana* and *F. vargasi* are: antennal segments III–VI pale on varying extension of surface in *F. senckenbergiana* (antennal segments V and VI dark brown in *F. vargasi*); trochanters and base of femora pale (middle and hind femora dark); pronotum with antero-

marginal, anteroangular, posteroangular internal and external setae 53–56, 60–61, 53–72 and 51–65 µm (48, 45, 45 and 60 µm); abdominal segment IX with pair S2 > S1 (S2 = S1).

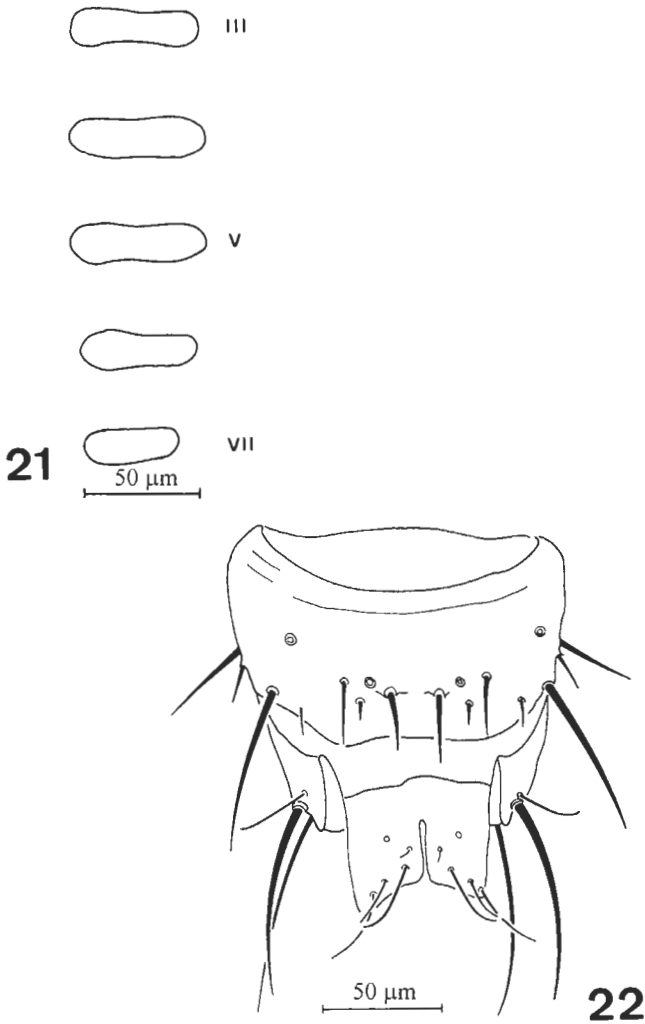
Frankliniella senckenbergiana can clearly be differentiated from *F. floydandrei* by the following characters: presence of pair I of postocular setae in *F. senckenbergiana* (absent in *F. floydandrei*); antennal segment VI bicoloured (segment VI greyish-brown); legs usually brown (legs generally yellow); interocellar setae 30–37 µm (10 µm); major setae of pronotum longer in the new species than in *F. floydandrei* and abdominal segment IX with the pairs of posteromarginal setae S2 > S1 = S3 (S2 = S3 and > S1).

Etymology

This species is named after Senckenberg Museum of Frankfurt-Main (Germany) because of its support and help in our research.



Figs. 15–20. *Frankliniella otites* sp. n., ♀ (15) Right antenna dorsally, type; (16) head dorsally, paratype; (17) pronotum, paratype; (18) metanotum, paratype; (19) sternite III with glandular areas, paratype; (20) abdominal segments VIII–X dorsally, paratype.



Figs. 21–22. *Frankliniella otites* sp. n., ♂ paratypes. (21) Glandular areas of sternites III–VII; (22) abdominal segments IX–X dorsally.

Frankliniella otites sp. n. (Figs. 15–22)

Description

♀, macropterous. Dark coloration. Body brown to light brown. Head, thorax and abdomen ranging from brown to light brown; fore wing dark with the equally coloured base or very slightly lightened; legs brown to light brown, fore tibiae and all tarsi always with lighter colour than the colour of the rest of legs. Antenna brown, antennal segments I–II and V–VIII brown, segment II slightly darker than the rest, segment III yellowish-brown and segment IV light brown. Bases of antennal segments III, IV and V always slightly lighter than colour of the respective segment.

Head 95–109 µm long, 151–176 µm wide (Fig. 16) with the cheeks convergent towards back; three pairs of ocellar setae, interocellar setae being located at position 3 of Retana and Mound (1994) reaching 26–37 µm length (1.6–2.0 times the longitudinal diameter of hind ocellus, except in one

paratype which reaches 2.3) and interval 19–23 µm; six pairs of postocular setae, postocular setae I present and pair IV reaching 19–24 µm; occiput with some sculptural lines more distinct and others hardly visible. Antenna 266–285 µm long (Fig. 15), antennal segment III with pedicel simple, segment III and IV with sense cones forked. Length (width) of antennal segments, segment III with pedicel, in µm: I 21–23 (28–30), II 34–36 (20–27), III 44–46 (23–26), IV 39–44 (21–23), V 30–32 (19–20), VI 46–49 (19–21), VII 9 (7–9) and VIII 16–20 (5–6).

Pronotum 128–144 µm long, 208–223 µm wide (Fig. 17), as a rule smooth with some sculptural lines at anterior margin and others at posterior margin; discal area with three to five pairs of setae on anterior half as well as on posterior half, the longest pair 16–23 µm is the most lateral and the remaining pairs attain a length 6–14 µm; anteromarginal setae 35–46 µm, anteroangular setae 48–59 µm and small two setae between the anteromarginal ones reaching 12–14 µm in length; posteroangular internal setae 60–77 µm and posteroangular external setae 58–70 µm, with six pairs of posteromarginal setae, pair II being longest 30–49 µm.

Mesonotum with transverse sculptural lines, hardly visible, two campaniform sensilla near anterior margin and two pairs of posteromarginal setae, central pair 9–12 µm and lateral pair 14–16 µm long, respectively. Metanotum (Fig. 18) with lateral sculptural lines and almost smooth at centre, two campaniform sensilla at centre or posterior third of metanotal area and two pairs of anteromarginal setae, inner pair 46–58 µm and outer pair 30–37 µm long.

Forewing 798–869 µm long, upper vein with 19–23 setae and lower vein with 15–20 setae, scale with five setae the border and one seta on the discal area.

Abdomen with tenuous sculptural lines, tergite IV with ctenidia with few microtrichia up to pair S2 or even surpassing it, tergite VIII (Fig. 20) with complete comb of 10–14 microtrichia on posterior margin, sternite III (Fig. 19) with two circular glandular areas 8–14 µm in diameter. Abdominal segment IX 56–63 µm long (Fig. 20), discal setae 15–23 µm, major posteromarginal setae S1, S2 and S3 81–90, 102–123 and 104–125 µm long, respectively, generally with S3 > S2 > S1. Abdominal segment X 84–93 µm long (Fig. 20), setae S1 and S2 111–123 and 104–109 µm long, being S1 > S2.

Total body length 1.625–1.802 µm (distended).

♂: General colour as in female but abdomen tends to become gradually darker towards end; forewing light brown; legs light brown and with same variations as in female. Antenna generally brown, antennal segments I–II light brown and segments V–VIII brown, antennal segment III pale brown–yellow, half or basal third of segment IV pale brown–yellow and rest of this segment clear brown. Sculpture very similar to that of female.

Head 97–100 µm long, 155 µm wide; interocellar setae 32 µm long and pair IV of postocular setae 23–26 µm long. Antenna 210–266 µm long. Length (width) of antennal segments, segment III with pedicel, in µm: I 19–23 (26–28), II

30 (26), III 39–42 (21–23), IV 35–39 (21), V 28–30 (19), VI 46–49 (19–20), VII 8–9 (8–9) and VIII 16 (5–6).

Pronotum 116–121 µm long, 202–209 µm wide; anteromarginal setae 44–46 µm, anteroangular setae 53–60 µm, posteroangular internal setae 60–70 µm, posteroangular external setae 50–63 µm and pair II of posteromarginal setae 32–46 µm, respectively. Forewing 703–741 µm long.

Abdominal sternites III–VII with glandular areas (Fig. 21), clearly transverse, length (width) in µm: III 8–12 (44–56), IV 9–12 (51–60), V 9–14 (44–58), VI 9–12 (39–51) and VII 12–16 (35–42). Abdominal tergite VIII with comb, on the posterior margin, of nine to eleven microtrichia each with a very broad base. Abdominal segment IX 56–63 µm long (Fig. 22); posteromarginal setae S1, S2 and S3 30–32, 67–72 and 37–44 µm, respectively; pair of discal setae 26–35 µm long. Abdominal segment X 44–49 µm in length (Fig. 22); pair of falciform setae 88–102 µm long (Fig. 22).

Total body length 1.329–1.359 µm.

Type series

Holotype: ♀, Chile: Cuesta de los Aniques (between Liquiñe and Coñaripe), province of Valdivia, region of Los Lagos, 1.II.1998, on *Senecio otites* ex Kunze DC. (Asteraceae), 540 m, J. Amigo, leg. Paratypes: 1 ♀, with the same data as holotype. 9 ♀, 5 ♂ Parque Oncol, province of Valdivia, region of Los Lagos, 13.II.2000, on *Senecio otites* ex Kunz DC. (Asteraceae), 560 m, J. Amigo leg.

The holotype and most of the paratypes are deposited at the Department of Entomology of the Faculty of Biology of the Complutense University in Madrid. The remaining paratypes are deposited in the Forschungsinstitut Senckenberg, Frankfurt-Main, Germany.

Diagnosis

Frankliniella otites seems to fit within the upper part of the range found in the *F. minuta* group. The ratio between the interocellar setae and the longitudinal diameter of the hind ocellus is 1.6–2.0 (in one paratype 2.3) compared to the maximum of 2.0 in the species key by Mound and Marullo (1996).

The paler specimens of *F. otites* can be compared to *F. trisetosa* Hood (1942), from Peru, due to the coloration of the body, the number of postocular setae and the relationship between the abdominal segment X and IX. The differences between these species are as follows: femora brown in *F. otites* n. sp. (bicoloured in *F. trisetosa*); mesonotum with hardly visible sculpture (strong and with greater number of lines); interocellar setae 26–37 µm (15–20 µm); pronotum with anteromarginal, anteroangular, posteroangular internal and external setae 35–46, 48–59, 60–77 and 58–70 µm (20–33, 30–38, 40–58 and 30–55 µm); comb of tergite VIII with 10–14 teeth (18–23) and major setae of abdominal segments IX and X longer in the new species.

The darker specimens of the new species can be confused with *F. valdiviana* Sakimura & O'Neill, 1979 because of the coloration and general body sculpture, the number of postocular setae, and the presence of campaniform sensilla on metanotum. However, the new species is larger than *F. valdiviana*; interocellar setae 26–37 µm in *F. otites* n. sp. (12 µm in *F. valdiviana*), anteromarginal and anteroangular setae of the pronotum 35–46 and 48–59 µm (7–20 and 10–25 µm) and the relationship of abdominal segments X/IX 1.4–1.6 (1.6–2.0). Regarding the males, the glandular areas of the abdominal sternites are clearly transverse in *F. otites* (oblong or somewhat transverse in *F. valdiviana*) and the falciform setae of the X segment 88–102 µm (60–78 µm).

Frankliniella otites also appears to be related to *F. bagnalliana* Hood (1925), from Panama in the colour of the body, the interocellar setae and the number of postocular setae, among other characters. They can be distinguished because the femora are brown in *F. otites* (bicoloured in *F. bagnalliana*); antennal segment V brown (yellow); interocellar setae in position 3 (position 2); antennal segment VI 46–49 µm (36–45 µm); pronotum with posteroangular internal and external setae 60–77 and 58–70 µm (58–64 and 55–56 µm) and major setae of the abdominal segment IX and X larger in the new species.

Finally, *F. otites* and *F. amigoi* are similar in that they share, with *F. bagnalliana*, a strong relationship between the interocellar setae and the longitudinal diameter of the hind ocellus within *F. minuta* group, in addition to the coloration and the number of postocular setae. They can be differentiated by: the colour of the antennal segments III–IV, which are clearer in *F. otites* (brown in *F. amigoi*); antennal segment VI 46–49 µm (49–56 µm); anteromarginal setae of pronotum 35–46 µm (21–32 µm); abdominal segment X/IX 1.4–1.6 (1.0–1.1) and large setae of abdominal segments IX and X much shorter in *F. otites* than in *F. amigoi*. Regarding the males, the glandular areas are transverse in *F. otites* (strongly transverse in *F. amigoi*) and the falciform setae of the abdominal segment X longer 88–102 µm and slender (shorter 70–86 µm and thick).

Etymology

This species is named after its host-plant, *Senecio otites*.

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