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## New host plant and distribution records for Peruvian Tephritinae (Diptera: Tephritidae)

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**ABSTRACT.** NORRBOM AL, SUTTON BD, STECK GJ, NOLAZCO-ALVARADO N, YABAR-LANDA E, PUMA BL, QUISPE-QUISPE CJ, AZORSA-SALAZAR F. 2013. New host plant and distribution records for Peruvian Tephritinae (Diptera: Tephritidae). Rev. peru. entomol. 48(2): 19-28. Distribution and host plant records (all Asteraceae) are reported for 17 species of Tephritinae: *Acinia reticulata* (stem galls on *Tessaria integrifolia*); *Dracontomyia footei* (stem galls on *Baccharis salicifolia*); *Ensina hyalipennis* (Argentina; flowerheads of *Sonchus asper*); *E. longiceps* (flowerheads of *Hypochaeris meyeniana*); *Euaresta reticulata*; *Lamproxyna nitidula*; *Neotaracia imox* (Peru); *Paracantha haywardi* (Peru and Jujuy, Argentina; flowerheads of *Rhysolepis helianthoides* and *Viguiera fusiformis*); *Phacelochaeta quinquefasciata* (flowerheads of *Paranephelius ovatus*); *Plaumannimyia scutellata* (flowerheads of *Baccharis pulchella*); *Pyrgotoides peruvianus* (stem galls on *Ageratina pentlandiana*); *Tomoplagia argentinensis* (Peru and Salta, Argentina; flowerheads of *Cyrtocymura scorpioides*); *Trupanea asteroides*; *T. brevitarsis* (flowerheads of *Barnadesia pycnophylla*); *T. hendeli*; *T. metoeca* Hendel (flowerheads of *Aristeguietia discolor*); *T. pentheres* (flowerheads of *Perezia multiflora*); and *T. zonata*.

**RESUMEN.** NORRBOM AL, SUTTON BD, STECK GJ, NOLAZCO-ALVARADO N, YABAR-LANDA E, PUMA BL, QUISPE-QUISPE CJ, AZORSA-SALAZAR F. 2013. Nuevos registros de plantas hospederas y distribución de Tephritinae Peruanos (Diptera: Tephritidae). Rev. peru. entomol. 48(2): 19-28. Registros de distribución y plantas hospederas (todas Asteraceae) se reportan para 17 especies de Tephritinae: *Acinia reticulata* (agallas del tallo en *Tessaria integrifolia*); *Dracontomyia footei* (agallas del tallo en *Baccharis salicifolia*); *Ensina hyalipennis* (Argentina; cabezuelas de *Sonchus asper*); *E. longiceps* (cabezuelas de *Hypochaeris meyeniana*); *Euaresta reticulata*; *Lamproxyna nitidula*; *Neotaracia imox* (Perú); *Paracantha haywardi* (Perú and Jujuy, Argentina; cabezuelas de *Rhysolepis helianthoides* y *Viguiera fusiformis*); *Phacelochaeta quinquefasciata* (cabezuelas de *Paranephelius ovatus*); *Plaumannimyia scutellata* (cabezuelas de *Baccharis pulchella*); *Pyrgotoides peruvianus* (agallas del tallo en *Ageratina pentlandiana*); *Tomoplagia argentinensis* (Perú and Salta, Argentina; cabezuelas de *Cyrtocymura scorpioides*); *Trupanea asteroides*; *T. brevitarsis* (cabezuelas de *Barnadesia pycnophylla*); *T. hendeli*; *T. metoeca* Hendel (cabezuelas de *Aristeguietia discolor*); *T. pentheres* (cabezuelas de *Perezia multiflora*); and *T. zonata*.

### Introducción

The fauna of fruit flies (Diptera: Tephritidae) of Peru is relatively poorly known. The latest comprehensive

taxonomic treatment, by Hering (1941), is badly outdated. Approximately 165 species of Tephritidae have been recorded from Peru (Norrbom 2004, Norrbom & Korytkowski 2012), but we estimate the actual number of species to be 2-3 times that number. Distribution records for most species are limited, and knowledge of their host plants is scant or nonexistent, except for the economically important species, such as *Ceratitis capitata* (Wiedemann) and some species of *Anastrepha*. In this paper we report new distribution and host records from Peru and other Andean countries for species of the subfamily Tephritinae, which breed in the plant family Asteraceae. This work is part of a project to increase knowledge of the taxonomy and natural history of Peruvian fruit flies, and contribute to taxonomic revisions and studies of the biogeography and phylogeny of Neotropical Tephritidae.

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## Materials and Methods

Label data for all examined specimens will be made available in the New World fruit fly specimen database on the Systematic Entomology Laboratory web site ([www.sel.barc.usda.gov:591/diptera/Tephritidae/TephIntro.html](http://www.sel.barc.usda.gov:591/diptera/Tephritidae/TephIntro.html)). Acronyms for the institutions where specimens are deposited are: CAS – California Academy of Sciences San Francisco; CEBIO – Centro de Ecología y Biodiversidad, Lima; CDFA – California Department of Food & Agriculture, Sacramento; CNC – Canadian National Collection, Ottawa; DEBUG – Department of Environmental Biology, University of Guelph; FSCA – Florida State Collection of Arthropods, Gainesville; IML – Instituto Miguel Lillo, Tucumán; MEUA – Museo de Entomología, Universidad Nacional Agraria, La Molina, Lima; MNKM – Museo de Historia Natural Noel Kempff Mercado, Santa Cruz; SENASA – Servicio Nacional de Sanidad Agraria, La Molina, Lima; SMT – Staatliches Museum für Tierkunde, Dresden; TAUU – Tel Aviv University; USAA – Universidad Nacional San Antonio Abad del Cusco; USNM – National Museum of Natural History, Smithsonian Institution, Washington, DC.; ZIL – Zoological Institute, Lund.

### *Acinia reticulata* Aczél, 1958

**Distribution.** This species is known only from Peru (Aczél 1958, Norrbom *et al.* 1999).

**Biology.** This fly breeds in stem galls on *Tessaria integrifolia* Ruiz & Pav. as reported by Aczél (1958). We reared additional specimens that confirm this relationship. The galls are spherical and usually contain multiple larvae in separate chambers (Figs. 1-2). We opened 10 galls that contained 1-7 larvae or puparia, with an average of 4.5 per gall.

**Specimens examined.** PERU: Lima: carretera Cieneguilla - Huarochirí, Km. 30-31, unpaved road to Río Lurín, 12°4'4"S 76°45'10"W, emerged 12-21 Apr 2010 reared ex stem galls on *Tessaria integrifolia* (10-PE-01) collected 11 Apr 2010, N. Nolzaco & A.L. Norrbom, 8m7f (CEBIO, MEUA, SENASA, USNM).

### *Dracontomyia footi* Aczél, 1953

**Biology.** Norrbom *et al.* (2010) recorded two specimens collected by Weyrauch from stem galls ('Aus Stenelgallen') on *Baccharis salicifolia* (Ruiz & Pav.) Pers., but without further information. We reared additional specimens that confirm this relationship. The larvae breed in apical galls on slender branches 2-3 mm in diameter of this plant, a shrub 2-3 m tall in the locality where we collected the galls. The galls are 8-10 mm long and 4-5 mm in diameter (Figs. 3-4). They seem to kill the apical meristem as there was no growth of the branches beyond the galls. We found only one larva or puparium per gall.

**Specimens examined.** PERU: Lima: Río Lurín above Cieneguilla, km 25.5 at bridge, WP 576, 12.09419°S 76.77606°W, 373 m., emerged 19 Dec 2011- 10 Jan 2012 reared ex apical stem galls on *Baccharis salicifolia* (11-PE-33) collected 15 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 9m9f (CEBIO, FSCA, SENASA, USNM).

### *Ensina hyalipennis* (Hennig, 1940)

**Biology.** The larvae of this species develop in flowerheads of *Sonchus* species, including *S. asper* (L.) Hill and *S. oleraceus* L., and like its weedy hosts it is widely distributed in highland and coastal parts of Peru and the other Andean countries. The first record from Argentina is reported below along with additional records from Peru.

**Specimens examined.** ARGENTINA: Salta: Rosario de Lerma, Malaise trap, 17-18 Nov 1983, M. Wasbauer, 2f (CDFA). PERU: Cusco: below Huacoto, WP 681, 13.51591°S 71.85944°W, 4088 m., sweeping grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 1f (USNM); Carretera Manu, ~ 6 km NNW of Paucartambo, 13°16'15"S 71°36'51"W, 2890 m., emerged 14-16 Dec 2011 reared ex flowerheads of *Sonchus asper* (11-PE-21) collected 12 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 4m2f (FSCA, SENASA, USNM); Pto. Maldonado Hwy. (30C), 7 km above Cjunucunca, WP 655, 13.66157°S 71.59068°W, 4108 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 2f (USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333°S 71.59669°W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m2f (CEBIO, USNM); same locality, emerged 29 Jun 2012 reared ex flowerheads of *Sonchus* sp. (12-PE-44) collected 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1f (USNM). Lima: carretera Cieneguilla - Huarochirí, below Chontay, 12°2'31"S 76°43'10"W, 534 m., on flowering *Sonchus asper* (10-PE-04), 11 Apr 2010, N. Nolzaco & A.L. Norrbom, 11m9f (CEBIO, MEUA, SENASA, USNM); same locality, emerged 12-15 Apr 2010 reared ex flowerheads of *Sonchus asper* (10-PE-04) collected 11 Apr 2010, N. Nolzaco & A.L. Norrbom, 10m10f (CEBIO, FSCA, MEUA, SENASA, USNM); Huacho-Huaura, sector Campiña, distrito Santa María, 11°5'18"S 77°34'39"W, 13 Sep 2009, A. L. Norrbom & N. Nolzaco, 3m4f (SENASA, USNM); Rimac Canyon, Rt. 20, btw. San Mateo & Tunel Cacrag, 11°44'27"S 76°17'8"W, 3323 m., 16 Apr 2010, N. Nolzaco & A.L. Norrbom, 1m1f (USNM).

### *Ensina longiceps* (Hendel, 1914)

**Distribution.** This species is known from Peru, Bolivia and Argentina (Norrbom *et al.* 1999). Data documenting the records from Argentina and Bolivia are provided below. Within Peru, *E. longiceps* is known from high elevation areas in Cusco, Junín,

Lima, and Puno Departments.

**Biology.** We reared this fly from flowerheads of *Hypochoeris meyeniana* (Walp.) Benth. & Hook. f. ex Griseb. (Figs. 5-6), the first known host plant for this species. Like those of other species of *Ensina*, the host plant of *E. longiceps* belongs to the *Asteraceae* tribe *Cichorieae*. Both the plant and fly are common in puna and prepuna habitats in Cusco Department. We collected flies between 3979-4592 m altitude and reared them from plants at sites from 3919-4592 m. The larvae feed on the ovaries and developing seeds within the flowerhead.

**Specimens examined.** ARGENTINA: Jujuy: La Quiaca, 3500 m., 23 Oct 1968, L. E. Pena, 4m1f (CNC, USNM). BOLIVIA: La Paz: Guaqui, Lake Titicaca, 30 May 1903, [Schnuse Collection], 1f (SMT). PERU: Cusco: below Huacoto, WP 681, 13.51591°S 71.85944°W, 4088 m., sweeping grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 1f (USNM); Pachatusa, end of road, flat area opposite pass, WP 680, 13.49857°S 71.82633°W, 4298 m., sweeping low grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 2m3f (CEBIO, USNM); Pto. Maldonado Hwy. (30C), 1 km E of Pampacancha, WP 649, 13.62487°S 71.26673°W, 3997 m., emerged 22 Jun 2012 reared ex flowerheads of *Hypochoeris meyeniana* (12-PE-25) collected 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 1m (USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333°S 71.59669°W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 3m1f (USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629°S 71.60089°W, 3979 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m1f (USNM); Pto. Maldonado Hwy. (30C), above Tinke, WP 650, 13.64212°S 71.28519°W, 3919 m., emerged 19-26 Jun 2012 reared ex flowerheads of *Hypochoeris meyeniana* (12-PE-26) collected 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 10m12f (CEBIO, FSCA, USNM); road to Laguna Sibinacocha, ~ 21 km NE Santa Barbara, WP 673, 14.03163°S 71.11942°W, 4592 m., 9 Jun 2012, A. L. Norrbom, B. D. Sutton & C. Quispe, 4m3f (USNM, USAA); same locality, emerged 18-30 Jun 2012 reared ex flowerheads of *Hypochoeris meyeniana* (12-PE-41) collected 9 Jun 2012, A. L. Norrbom, B. D. Sutton & C. Quispe, 4m7f (USNM, USAA); road to Laguna Sibinacocha, ~24 km NE Santa Barbara, WP 668, 14.02446°S 71.09799°W, 4708 m., emerged 21-22 Jun 2012 reared ex flowerheads of *Hypochoeris meyeniana* (12-PE-37) collected 9 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 2m2f (FSCA, USNM). Junín: Ondores, 4100 m., puna and wet pastures, 28-3 Dec 1980, Gardenfors - Hall - Sammuellsson, 1m (ZIL); La Oroya, 4000 m., 21 Jan 1904, [Schnuse Collection], 2m1f (SMT); Tarma, 21 Jan 1904, [Schnuse Collection], 1f (SMT). Lima: [unspecified locality], 30 Jul 1914, H. S. Parish, 1f (USNM). Puno: Puno, Lake Titicaca, 12 Nov 1902, [Schnuse Collection],

1m (SMT); same, 16 Nov 1902, 2m1f (SMT, USNM); same, 20 Nov 1902, 1m1f (SMT, USNM).

### *Euaresta reticulata* (Hendel, 1914)

**Distribution.** The larvae of this species develop in flowerheads of *Ambrosia arborescens* Mill., and like its weedy host it is widely distributed in Colombia, Ecuador, Peru and Bolivia. Additional records are reported below.

**Specimens examined.** PERU: Ayacucho: Rt. 26A, W of Lucanas, WP 497, 14.61545°S 74.27716°W, 3496 m., on flowering *Baccharis mandonii* (11-PE-01), 3 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 14m11f (CEBIO, FSCA, USNM, USAA). Cusco: Calca-Lares road, Accha Baja, WP 643, 13.2804°S 71.93099°W, 3270 m., on flowering *Ambrosia* sp., 5 Jun 2012, A.L. Norrbom & B. D. Sutton, 1m (USNM). Huánuco: Rt. 3N, 2 km. N of Pachachupan, 9°46'24"S 76°5'49"W, 2270 m., on flowering *Ambrosia arborescens*, 22 Apr 2010, N. Nolzaco & A.L. Norrbom, 5m6f (FSCA, SENASA, USNM). Junín: Rt. 20A, Tarma, 11°24'50"S 75°44'51"W, 2209 m., on flowering *Ambrosia arborescens* (10-PE-18), 19 Apr 2010, N. Nolzaco & A.L. Norrbom, 2m6f (SENASA, USNM). Lima: Matucana, 28 Jul 1982, R. B. Miller & L. A. Stange, 2m1f (FSCA). Rimac Canyon, Rt. 20, between San Mateo & Tunel Cacrag, 11°44'27"S 76°17'8"W, 3323 m., 16 Apr 2010, N. Nolzaco & A.L. Norrbom, 6m6f (CEBIO, USNM). Piura: Huancabamba, 13 Aug 1945, P. A. Berry, 1m (USNM).

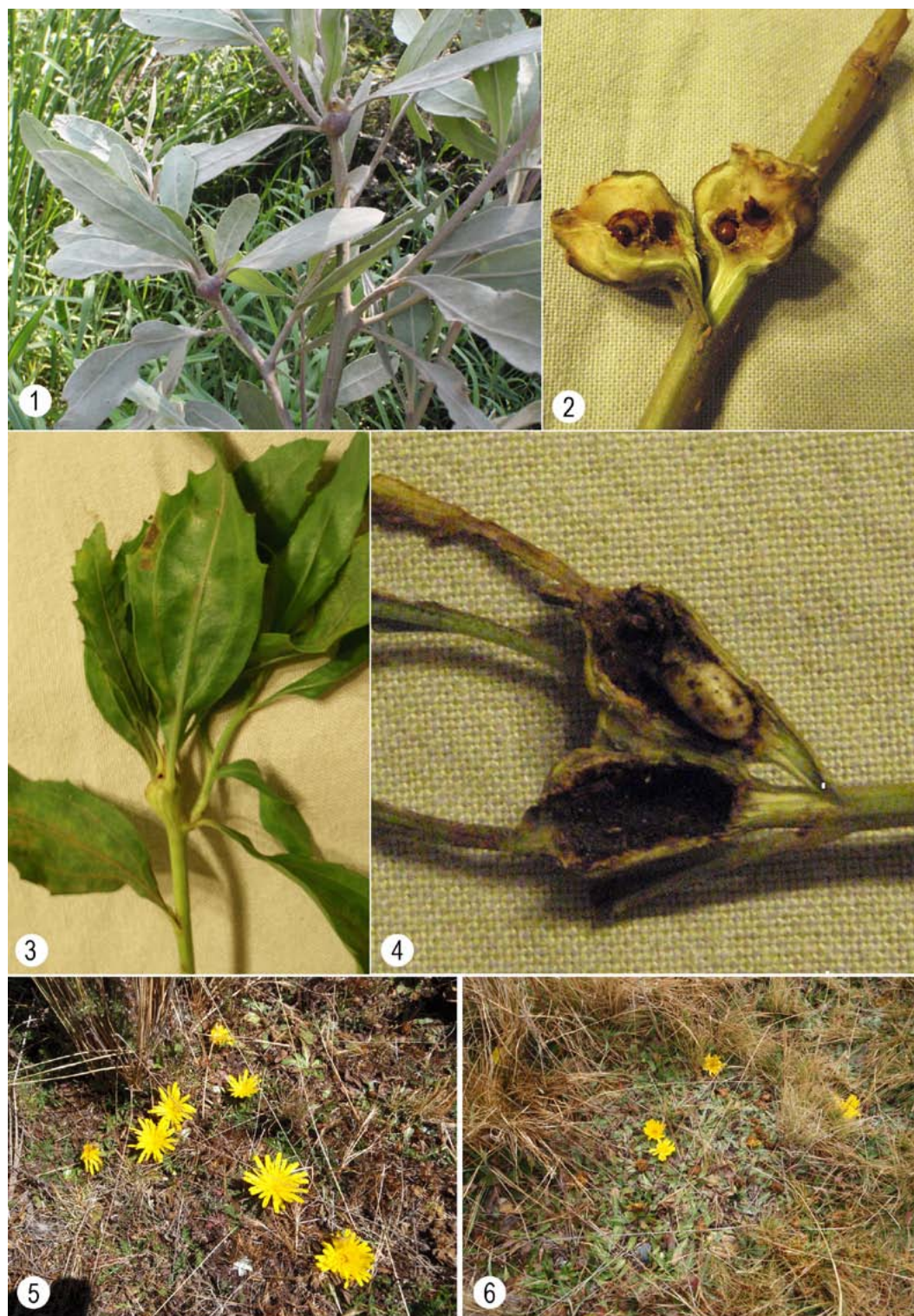
### *Lamproxyna nitidula* Hendel, 1914

**Distribution.** This species is known only from high altitudes in Peru and Bolivia. It was described from nine males and females from Cusco, 3700- 4000 m., 17 June 1905. We collected it at two sites in Cusco Department at 4298 and 4592 m. Its host plants are unknown.

**Specimens examined.** PERU: Cusco: road to Laguna Sibinacocha, ~ 21 km NE Santa Barbara, WP 673, 14.03163°S 71.11942°W, 4592 m., 9 Jun 2012, A. L. Norrbom, B. D. Sutton & C. Quispe, 2f (USAA, USNM). Pachatusa, end of road, flat area opposite pass, WP 680, 13.49857°S 71.82633°W, 4298 m., sweeping low grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 2m4f (CEBIO, USNM).

### *Neotaracia imox* (Bates, 1934)

**Distribution.** This widespread lowland species has been recorded from Colombia, Costa Rica, Ecuador, Guatemala, Mexico (Veracruz, Chiapas), Nicaragua, Panama, Trinidad, Tobago, and Venezuela (Norrbom *et al.* 1999). This is the first record from Peru. Two adult females were collected on *Synedrella nodiflora* (L.) Gaertn., the only recorded host plant (Foote 1979).



**Figures 1-6.** 1, *Tessaria integrifolia* with two galls of *Acinia reticulata*. 2, Opened gall of *Acinia reticulata*. 3, *Baccharis salicifolia* with terminal stem gall of *Dracontomyia footei*. 4, Opened gall of *Dracontomyia footei*. 5, *Hypochaeris meyeniana*, WP 469, host of *Ensina longiceps*. 6, same, *Pachatusa*.

**Specimens examined.** PERU: Junín: La Merced, Fundo San José, 11°4'12"S 75°20'34"W, 844 m., on flowering *Synedrella nodiflora* (10-PE-11), 17 Apr 2010, N. Nolzaco & A.L. Norrbom, 2f (CEBIO, USNM).

***Paracantha haywardi* Aczél, 1952**

**Distribution.** This species was previously known from Argentina (Salta) and Bolivia. These are the first records from Peru and Jujuy, Argentina, and specimen data are provided to document the record of Bolivia in Norrbom *et al.* (1999).

**Biology.** Adults were reared from capitula of *Rhyssolepis helianthoides* (L. Rich.) H. Rob. & A.J. Moore (Figs. 7-8) and *Viguiera fusiformis* F. S. Blake, the first host records for this species. Both species of plants belong to the *Asteraceae* tribe *Heliantheae*.

**Specimens examined.** ARGENTINA: Jujuy: Jujuy, 17 km. N of, emerged from seed heads of composite, 23 Apr 1993, Gandolfo & Cordo, 1f (USNM); Salta: Cachi, 28 Jan 1968, Goldbach, Teran & Willink, 1f (IML); Canyada la Gotera, 15 km. W of Chicoana, forest remnant, 16-28 Feb 1992, S. A. Marshall, 1f (DEBUG); Salta, 14 Feb 1951, Ross & Michelbacher, 1m (CAS); Tacuil, 2700 m., 23-27 Jan 1968, Goldbach, Teran & Willink, 1m (IML). BOLIVIA: Cochabamba: Cochabamba, 17°23.3'S 66°7'W, 2610 m., 25 Mar 2001, A. Freidberg, 3m1f (TAUI, USNM). La Paz: La Paz, 4 Oct 1972, G. E. Bohart, 2m2f (USNM, USUL); La Paz, Museo Nacional de Historia Natural grounds, 16°32'20"S 68°04'14"W, 3360 m., 20 Mar 2001, A. Freidberg, 8m6f (MNKM, TAUI, USNM); La Paz, Museo Nacional de Historia Natural grounds, 16°32'20"S 68°4'14"W, emerged 3-10 May 2001 reared ex flowers of *Viguiera fusiformis* (01-Bol-29) collected 17 Apr 2001, A. L. Norrbom & G. A. Kung, 1m2f (MNKM, USNM); Puente Villa, 17 km. W of, 16°20.9'S 67°49'W, 2070 m., 11 Mar 2001, A. Freidberg, 1m (TAUI). Sucre: Salamcachi, 2600 m., 23 Feb 1976, L. E. Pena, 2m1f (CNC). PERU: Cusco: Pto. Maldonado Hwy. (30C), Chacachimpa, WP 647, 13.61907°S 71.40044°W, 3525 m., emerged 11-29 Jun 2012 reared ex flowerheads of *Rhyssolepis helianthoides* (12-PE-21) collected 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 11m16f (CEBIO, FSCA, USAA, USNM).

***Phacelochaeta quinquefasciata* (Hendel, 1914)**

**Distribution.** This species is known from high elevation areas of Peru (Apurímac, Cusco, Junín) and Bolivia (La Paz). The collection localities for which altitude data were provided are at or above 3600 m. The specimens from Apurímac reported below are the first record from that department.

**Biology.** We reared this species from flowerheads of *Paranephelius ovatus* Wedd. (Figs. 9-10), the

first recorded host plant for this species and for the genus *Phacelochaeta*. The host plant belongs to the tribe *Liabeae* of the *Asteraceae*. The larvae feed on the developing seeds and burrow extensively in the receptacle, pupating there or usually further down into the stem. Both the stem and usually the receptacle are below the surface of the ground in this plant, and this pupation site presumably provides more shelter from the cold and dry conditions of the puna.

**Specimens examined.** PERU: Apurímac: Rt. 26A, nr. Mestizas, just below edge of puna, WP 569, 14.51282°S 73.27029°W, 4180 m., 14 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 1m2f (CEBIO, FSCA, USNM). Junín: Rt. 20, SW of La Oroya, waypt. 7, 11°37'09"S 75°59'04"W, 3943 m., emerged 25 May - 7 Jun 2010 reared ex flowerheads of *Paranephelius ovatus* (10-PE-09) collected 16 Apr 2010, N. Nolzaco & A.L. Norrbom, 3m2f (SENASA, USNM).

***Plaumannimyia scutellata* (Séguy, 1933)**

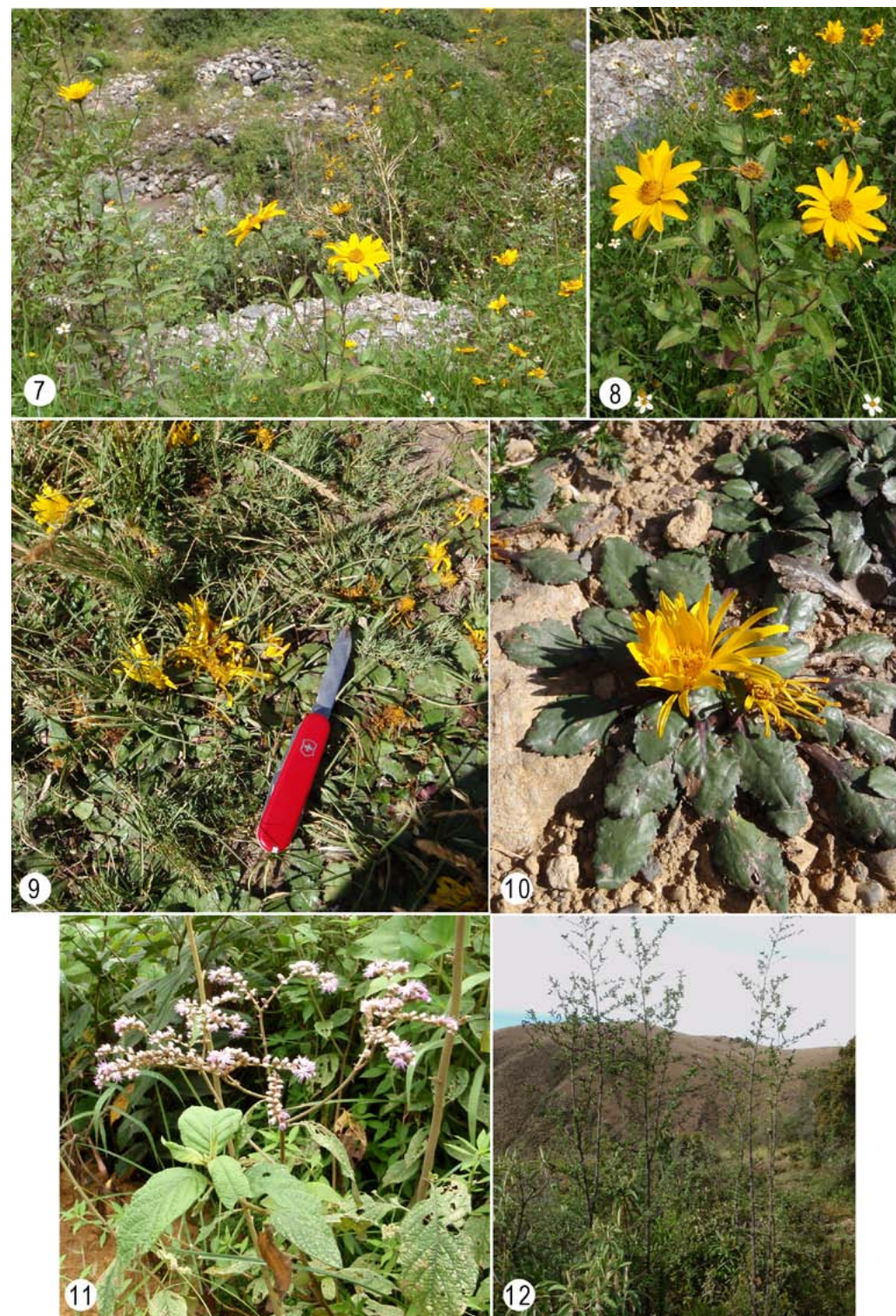
**Distribution.** This species is known from Ecuador, Peru, Bolivia, n. Chile, and Argentina (Norrbom *et al.* 1999). The sites in Peru where we collected it are between about 3500 to 4100 m altitude.

**Biology.** We reared this fly from flowerheads of *Baccharis pulchella* Sch. Bip. ex Griseb., the first reported host plant. We also collected adults on two other species of *Baccharis*.

**Specimens examined.** PERU: Ayacucho: Rt. 26A, NE of Puquio, puna, WP 571, 14.64653°S 74.05079°W, 4088 m., 14 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 1f (USNM); Rt. 26A, W of Lucanas, WP 497, 14.61545°S 74.27716°W, 3496 m., on flowering *Baccharis mandonii* (11-PE-01), 3 Dec 2011, Norrbom, Steck, Sutton & Nolzaco, 1m (USNM). Cusco: Paucartambo-Pisac road, between Rayancancha & Tocra, ~ km 5, WP 625, 13.34049°S 71.7267°W, 3607 m., on *Baccharis peruviana* (12-PE-51), 13 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m (USNM); Pto. Maldonado Hwy. (30C), 7 km above Cjunucunca, WP 655, 13.66157°S 71.59068°W, 4108 m., 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 1m1f (USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333°S 71.59669°W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 2m3f (USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629°S 71.60089°W, 3979 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 3m3f (CEBIO, USNM); same locality, emerged 22-25 Jun 2012 reared ex flowerheads of *Baccharis pulchella* (12-PE-45) collected 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 11m7f (CEBIO, FSCA, USNM, USAA).

***Pyrgotoides peruvianus* (Korytkowski, 1976)**

**Distribution.** This species is known only from Peru



**Figures 7-12.** 7-8, *Rhysolepis helianthoides*, host of *Paracantha haywardi*. 9-10, *Paranephelius ovatus*, host of *Phacelochaeta quinquefasciata*. 11, *Cyrtocymura scorpioides*, host of *Tomoplaga argentinensis*. 12, *Barnadesia pycnophylla*, host of *Trupanea brevitarsis*.

and previously was recorded only from the type locality, in the Rimac Valley, ENE of Lima. The records below include specimens from the departments of Amazonas and Cusco, suggesting that it occurs in dry Inter-Andean and coastal valleys in much of Peru.

**Biology.** This species forms large stem galls on two species in the tribe *Eupatorieae* (*Asteraceae*). The type specimens were reared from *Ophryosporus peruvianus* (J. G. Gmel.) R. M. King & H. Rob. (Korytkowski 1976; fly as *Gerrhoceras peruviana*, plant as *Piqueria peruviana*), and we reared it from *Ageratina pentlandiana* (DC.) R.M. King & H. Rob. The plant indicated as *Piqueria* sp. as the host of the female that Weyrauch reared from San Mateo (the type locality) might refer to the same plant from which the type series was reared.

We opened eight galls on *A. pentlandiana* that contained 1-7 larvae or puparia in a single large chamber. We measured eight galls ranging from 1.2-3.0 cm long, 0.7-1.5 cm in diameter, and 1.00-2.86 times as long as wide. Three galls on the undetermined plant from Chachapoyas are 2.1-3.2 cm long, 1.3-1.7 cm in diameter, and 1.4-2.0 times as long as wide.

**Specimens examined.** PERU: Amazonas: Chachapoyas [6°13'43"S 77°52'12"W], from galls, Aug 1962, J. Soukup, 8m5f (CEBIO, FSCA, USNM). Cusco: Calca-Lares road, below Totorá, WP 642, 13.25027°S 71.91171°W, 3674 m., emerged 16-25 Jul 2012 reared ex stem gall on *Ageratina pentlandiana* (12-PE-17) collected 5 Jun 2012, A. L. Norrbom & B. D. Sutton, 2m4f (FSCA, USAA, USNM); Carretera Manu, between Paucartambo & Huancarani, WP 553, 13.39564°S 71.60394°W, 3595 m., emerged Feb - Mar 2012 reared ex stem gall on *Ageratina pentlandiana* (11-PE-26) collected 12 Dec 2011, Norrbom, Steck, Sutton & Nolazco, 1m (CEBIO). Lima: Rio Rimac, San Mateo [11°45'34"S 76°18'2"W], 3000 m., ex stem gall on *Piqueria* sp., 1 Jan 1940, Weyrauch VKW 4809, 1f (IML).

#### *Tomoplaga argentinensis* Aczél, 1955

**Distribution.** This species has been previously recorded from Brazil (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo) and Argentina (Tucumán) (Norrbom *et al.* 1999). The records below include the first from Peru and Salta, Argentina.

**Biology.** The only reported host plant is *Cyrtocymura scorpioides* (Lam.) H. Rob. (Prado *et al.* 2002). We also reared it from flowerheads of this plant in Peru (Fig. 11).

**Specimens examined.** ARGENTINA: Salta: Rosario de Lerma, Malaise trap, 21-23 Dec 1983, M. Wasbauer, 1f (C DFA). PERU: Cusco: Carretera Manu, Cosñipata Valley, Paradise Lodge, WP 525, 13.05557°S 71.54436°W, 1370 m., emerged 11-22 Dec 2011 reared ex flowerheads of *Cyrtocymura scorpioides* (11-PE-07) collected 6 Dec 2011, Norrbom, Steck, Sutton &

Nolazco, 3m (SENASA, USNM).

#### *Trupanea asteroides* Hendel, 1914

**Distribution.** This species is known only from Chile and Peru (Hering 1941, Frías 1992). It may be restricted to the coastal zone. In Peru it was previously recorded from Arequipa: Mollendo (Hendel 1914) and Ica: Yauca Valley (Hering 1941).

**Biology.** *Haplopappus cerberoanus* Reiche is the only recorded host plant (Frías 1992).

**Specimens examined.** PERU: Lima: carretera Cieneguilla - Huarochirí, below Chontay, 12°2'31"S 76°43'10"W, 534 m., on flowering *Encelia canescens* Lam. (10-PE-03), 11 Apr 2010, N. Nolazco & A.L. Norrbom, 4m3f (USNM, SENASA); carretera Cieneguilla - Huarochirí, Km. 30-31, unpaved road to Río Lurín, 12°4'4"S 76°45'10"W, on flowering *Encelia canescens* Lam., 11 Apr 2010, N. Nolazco & A.L. Norrbom, 3m1f (USNM, CEBIO); Río Lurín btw. Cieneguilla & Manchay, WP 574, 12.13739°S 76.83025°W, 240 m., on *Baccharis salicifolia* (11-PE-32), 15 Dec 2011, Norrbom, Steck, Sutton & Nolazco, 1m1f (USNM, CEBIO).

#### *Trupanea brevitarsis* Hering, 1941

**Distribution.** This species is known only from Peru, and had been recorded previously from only two localities in Cusco (Cusco and Urubamba) and one in Apurímac (Mamara) (Hering 1941). We reared it from various localities in Cusco Department between 3479 and 4176 m. altitude, and collected adults as low as 2849 m. The host plant is relatively common in this range, particularly in disturbed areas. Its prominent spines no doubt discourage grazing.

**Biology.** We reared this species from flowerheads of *Barnadesia pycnophylla* Muschl. (*Asteraceae: Barnadesieae*) at multiple locations (Figs. 12-14). This is the first reported host plant for this fly. Adults emerged in December, June and July indicating that there are multiple generations per year. In December, 2011 most of the flowerheads we encountered had already dispersed their seeds, so the flies that were reared were probably from the end of the emergence period. The larvae feed on and pupariate among the developing seeds and associated flower parts.

**Specimens examined.** PERU: Cusco: Calca-Lares road, above Totorá, WP 641, 13.24462°S 71.90655°W, 3792 m., emerged 12-30 Jun reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-14) collected 5 Jun 2012, A. L. Norrbom & B. D. Sutton, 23m18f (CEBIO, FSCA, USNM, USAA); Carretera Manu, between Paucartambo & Huancarani, WP 578, 13.39698°S 71.5991°W, 3559 m., emerged 4-25 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-01) collected 1 Jun 2012, A. L. Norrbom, B. D. Sutton, B. Luz Puma & C. Quispe, 10m3f (FSCA, USNM);



**Figures 13-14.** 13, *Barnadesia pycnophylla*, flowerheads in bloom. 14, same, mature flowerheads.

Carretera Manu, W of Acjanaco, path to lower road, 13°12'1" S 71°37'32" W, 3502 m., emerged 11-26 Dec 2011 reared ex flowerheads of *Barnadesia pycnophylla* (11-PE-18) collected 10 Dec 2011, Norrbom, Steck, Sutton & Nolzco, 3m5f (FSCA, SENASA, USNM); between Huacoto & San Jeronimo, WP 682, 13.53083° S 71.87807° W, 3479 m., emerged 22-25 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* collected 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m3f (USNM); Ollantaytambo, E of, WP 665, 13.26707° S 72.22823° W, 2849 m., on *Baccharis boliviensis* (12-PE-36), 8 Jun 2012, A. L. Norrbom & B. D. Sutton, 1f (USNM); Paucartambo-Pisac road, between Rayancancha & Tocra, ~ km 5, WP 625, 13.34049° S 71.7267° W, 3607 m., emerged 12 Jun – 2 Jul 2012 reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-13) collected 4 Jun 2012, A. L. Norrbom & B. D. Sutton, 10m9f (CEBIO, USNM); Paucartambo-Pisac road, puna, WP 628, 13.33946° S 71.78619° W, 4176 m., emerged 16 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* collected 4 Jun 2012, A. L. Norrbom, B. D. Sutton, B. Luz Puma & C. Quispe, 2m (USNM, USAA); Pto. Maldonado Hwy. (30C), Chacachimpa, WP 647, 13.61907° S 71.40044° W, 3525 m., 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 8m7f (CEBIO, SENASA, USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629° S 71.60089° W, 3979 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m (USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629° S 71.60089° W, 3979 m., emerged 16 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-46) collected 10 Jun 2012, A. L.

Norrbom & B. D. Sutton, 1f (USAA); Pto. Maldonado Hwy. (30C), above Cuyuni, WP 654, 13.61639° S 71.57498° W, 3929 m., emerged 15-29 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-31) collected 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 6m3f (CEBIO, USNM); Pto. Maldonado Hwy. (30C), below Ocongate, WP 651, 13.62928° S 71.40923° W, 3565 m., emerged 8-18 Jun 2012 reared ex flowerheads of *Barnadesia pycnophylla* (12-PE-28) collected 7 Jun 2012, A. L. Norrbom & B. D. Sutton, 4f (USNM, USAA).

#### *Trupanea hendeli* Hering, 1941

**Distribution.** This species is known from Peru, Bolivia, Argentina, and Brazil (Norrbom *et al.* 1999). In Peru it was recorded from Cusco and Puno (Hering 1941). Additional records from Cusco are reported below.

**Specimens examined.** PERU: Cusco: below Huacoto, WP 681, 13.51591° S 71.85944° W, 4088 m., sweeping grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 3m1f (USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333° S 71.59669° W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 3m (CEBIO, USNM).

#### *Trupanea metoeca* Hendel, 1914

**Distribution.** This species has been recorded from Peru, Chile and Argentina (Norrbom *et al.* 1999). In Peru it is known from Cusco and Apurímac (Hendel 1914, Hering 1941). Additional records from Cusco are reported below.

**Biology.** We reared this species from flowerheads of *Aristeguietia discolor* (DC.) K. R. (*Asteraceae: Eupatorieae*). This is the first recorded host plant for

this species.

**Specimens examined.** PERU: Cusco: Carretera Manu, between Paucartambo & Huancarani, WP 552, 13.388° S 71.60201° W, emerged 15-31 Dec 2011 reared ex flowerheads of *Aristeguietia discolor* (11-PE-24) collected 12 Dec 2011, Norrbom, Steck, Sutton & Nolzco, 78m70f (FSCA, SENASA, USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333° S 71.59669° W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m4f (USNM, USAA); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629° S 71.60089° W, 3979 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 2f (USNM).

#### *Trupanea pentheres* Hendel, 1914

**Distribution.** This species was previously known only from the holotype, from Cusco (presumably the Cusco region), 4200 m (Hendel 1914, Norrbom *et al.* 1999). Additional records from Cusco Department and the first from Lima Department are reported below.

**Biology.** We reared this species from flowerheads of *Perezia multiflora* (Humb. & Bonpl.) Less. (*Asteraceae: Mutisieae*), the first recorded host plant.

**Specimens examined.** PERU: Cusco: Pto. Maldonado Hwy. (30C), 7 km above Cjunucunca, WP 655, 13.66157° S 71.59068° W, 4108 m., 7 Jun 2012, A. L. Norrbom, B. D. Sutton & B. Luz Puma, 1f (USNM); same locality, 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m1f (CEBIO, USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, Km 11-12, WP 677, 13.66333° S 71.59669° W, 4044 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1m2f (CEBIO, USNM); Pto. Maldonado Hwy. (30C), above Cjunucunca, WP 678, 13.6629° S 71.60089° W, 3979 m., 10 Jun 2012, A. L. Norrbom & B. D. Sutton, 1f (USAA). Lima: Rimac Canyon, Rt. 20, km. 115, Casapalca, S end, 11°39'31" S 76°14'34" W, 4163 m., emerged 9-11 May 2010 reared ex flowerheads of *Perezia multiflora* (10-PE-31) collected 23 Apr 2010, N. Nolzco & A.L. Norrbom, 4m8f (SENASA, USNM).

#### *Trupanea zonata* Hendel, 1914

**Distribution.** This species is previously known only from the type series, from Cusco and Puno, Peru (Hendel 1914). An additional record from Cusco is reported below.

**Specimens examined.** PERU: Cusco: Pachatusa, end of road, flat area opposite pass, WP 680, 13.49857° S 71.82633° W, 4298 m., sweeping low grass, 11 Jun 2012, A. L. Norrbom & B. D. Sutton, 4m3f (USNM, USAA).

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#### References

- Aczél ML. 1958. Revision of the American species of the genus *Acinia* Robineau-Desvoidy (Diptera, Trypetidae). *Revista Brasileira de Entomologia* 8: 75-105.
- Foote RH. 1979. A review of the neotropical genus *Neotaracia* Foote (Diptera: Tephritidae). *Journal of the Washington Academy of Science* 69: 174-179.
- Frías D. 1992. Aspectos de la biología evolutiva de especies de *Tephritidae* (Diptera) de distribución chilena. *Acta Entomológica Chilena* 17: 69-79.
- Hendel FG. 1914. Die Bohrfliegen Südamerikas. Übersicht und Katalog der bisher aus der neotropischen Region beschriebenen Tephritinen. *Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden* (1912) 14(3): 1-84.
- Hering EM. (1941) *Trypetidae* (Dipt.), p. 121-176, 1 pl. In Titschack, E., Beiträge zur Fauna Perus. Band 1. Hamburg.
- Korytkowski CA. 1976. El género *Gerrhoceras* Hering, y descripción de una nueva especie de hábitos cecidógenos. *Revista Brasileira de Biologia* 36: 411-417.
- Norrbom AL. 2004. Updates to Biosystematic Database of World Diptera for *Tephritidae* through 1999. Diptera Data Dissemination Disk 2.
- Norrbom AL, Carroll LE, Thompson FC, White IM, Freidberg A. 1999. Systematic database of names. In Thompson, F C (Ed.), *Fruit Fly Expert Identification System and Systematic Information Database*. Myia (1998), 9, pp. 65-251, and Diptera Data Dissemination Disk (CD-ROM) (1998) 1.
- Norrbom AL, Korytkowski CA. 2012. New species of *Anastrepha* (Diptera: Tephritidae), with a key for the species of the *Megacantha* clade. *Zootaxa* 3478: 510-552.
- Norrbom AL, Sutton BD, Steck GJ, Monzón J. 2010. New genera, species and host plant records of Nearctic and Neotropical Tephritidae (Diptera). *Zootaxa* 2398: 1-65.

Prado PI, Lewinsohn TM, Almeida AM, Norrbom AL,  
Buys BD, Macedo AC, Lopes MB. 2002. The fauna  
of *Tephritidae* (Diptera) from capitula of *Asteraceae*  
in Brazil. Proceedings of the Entomological Society  
of Washington 104: 1007–1028.

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