LOS INSECTOS DE LAS ISLAS JUAN FERNANDEZ

20. EPHYDRIDAE (Diptera)

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La familia Ephydridae es nueva para Juan Fernández y cuenta 22 especies; 19 se describen en el presente trabajo. Los géneros representados son: *Discocerina* (1 esp.), *Hydrellia* (1 esp.), *Hyadina* (1 esp.), *Dimecoenia* (1 esp.), *Scatella* (16 esp.) y *Scatophila* (2 esp.). *Scatella* es el género que más llama la atención por su extraordinario desarrollo en las islas. Sus especies más típicas son las que se hallan en el interior de los bosques densos de Masatierra y Masafuera, entre las cuales se encuentra un grupo con alas notablemente reducidas. La fauna se relaciona con la de Chile continental.

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The collection of ephydrid flies made by the Reverend Guillermo Kuschel of the University of Santiago on his two expeditions to the Chilean islands of the Juan Fernández group in 1951 and 1952 proved to be of extraordinary interest. The 299 specimens that Father Kuschel kindly sent to me for study represent 22 species of which 19 are described as new.

Perhaps the collection is not large enough to permit a detailed faunistic analysis, but the following general comments seem pertinent to the Juan Fernández zoogeography. Of the four currently recognized subfamilies of Ephydridae, three are represented by only a single species each *Hydrellia vulgaris* Cresson and *Hyadina certa* Cresson also occur on the South American mainland, and the third, *Discocerina fumipennis* n. sp., is apparently endemic, but all are probably of recent introduction. Only in the fourth subfamily, the Ephydrinae, is there evidence of important endemic evolution, with 18 species of there genera represented *Dimecoenia caesia* (van der Wulp) and *Scatophila medifemur* n. sp. occur. on the mainland as well, while a second species of *Scatophila* and all sixteen species of *Scatella* are apparently endemic. The genus *Scatella* has undergone a remarkable speciation in these islands. It includes five species with rudimentary wings, the first in the genus known to have undergone such degeneration.

Of the 18 endemic species of Ephydridae, 12 were taken only on Masatierra, three only on Masafuera, all at altitudes above 200 meters, and one, a *Scatophila*, only on Santa Clara at sea level. Two endemic species were taken on more than one island, *Scatella decemguttata* n. sp. occurring on all islands from sea level to 1.300 meters and *Scatella kuscheli* n. sp. occuring on Masatierra and Masafuera on the seacoast. Of the non-endemic species, one was taken only on Masatierra at sea level, one on both Masatierra and Masafuera above 200 meters, and two on Masatierra and Masafuera at sea level. Of the five brachypterous species of *Scatella*, three were taken only on Masatierra and two only on Masafuera, all at altitudes above 200 meters.

Kuschel (1953) has given a very comprehensive list of references dealing with Juan Fernández biogeography. For a brief view of the physical conditions and geological history of the Islands, Skottsberg's (1918) entertainingly written and well-illustrated account in the Geographical Review is highly recommended. In it, as well as in his later papers, which are listed by Kuschel, Skottsberg reaffirms his conclusions reached in an earlier paper (1914) that the strongly endemic Juan Fernández flora contains four important elements: a Chilean element related to the flora of Valdivia; a Magellanic or subantarctic element on Masafuera which may have immigrated at a time when it had a wider range on the continent as in glacial times; a third but small tropical-American element not related to the present flora of Chile but remaining from a little-known, ancient, tropical, Chilean flora; and fourth, an element of endemic plants with no known relatives or with relatives scattered far across the islands of the South Pacific. In the Ephydridae the Chilean element seems to be of first importance, but in addition to the recent introduction of modern Chilean species there is a harder to define but larger and more important group of species which are but vaguely related to modern Chilean species. I suspect that the ancestral stocks of these species came to the Juan Fernández land areas at different times from ancient Chilean and subantarctic parents, which in turn produced different groups of modern species on the mainland.

For the most part my systematic arrangement and morphological terminology of the Ephydridae follow those of Cresson (1931) whose paper in the series on the Diptera of Patagonia and South Chile should be consulted in connection with the present account of the Juan Fernández species. All types, allotypes, and a share of the paratype series are being returned to Father Kuschel for deposit in the collection of the Universidad de Chile at Santiago. The remaining paratypes are deposited in the United States National Museum in Washington, D. C.

Key to the Juan Fernández genera of Ephydridae

1. Face bare centrally and along oral margin..... 2
— Face setulose centrally and hairy along oral margin..... 4
2. At least two pairs of dorsocentral bristles; antennae with arista long-haired above..... *Hydrellia* Robineau-Desvoidy
— Mesonotum without strong dorsocentral bristles, only a pair of strong prescutellar intra-alars present..... 3
3. Arista long-haired above; fronto-orbital and postvertical bristles present and strong..... *Discocerina* Macquart
— Arista pubescent; fronto-orbitals and postverticals absent... *Hyadina* Haliday
4. Two pairs of lateroclinate fronto-orbital bristles; costa continued around wing margin to fourth vein..... 5
— One pair of lateroclinate fronto-orbitals; costa ends just beyond tip of third vein; wing with prominent color pattern..... *Scatophila*
5. Five pairs of strong dorsocentrals and no enlarged acrostichals; tarsal claws long and nearly straight; wing uniformly colored..... *Dimecoenia* Cresson
— Two pairs of strong postsutural dorsocentrals and one pair of strong presutural acrostichals; claws short and curved; wing usually with a pattern of small pale spots..... *Scatella* Robineau-Desvoidy

Subfamily SILOPINAE

Genus **Discocerina** Macquart

Discocerina (**Basila**) **fumipennis** Wirth, new species

♂, ♀. Length about 3 mm., wing 3,1 mm. by 1,0 mm.

Subshining blackish; face, parafacies and cheeks gray pollinose; frons and occiput densely brown pollinose; sides of body with more or less dull brown pollen. Third antennal segments and palpi yellowish brown; knees narrowly pale brownish; first two segments of tarsi yellowish, three distal segments brown; halteres with yellow knobs. Wings densely brown fumose, the veins blackish,

Head 1,2 times as broad as high; frons 1,4 times as broad as long. Eyes pubescent. Arista with five dorsal rays. Two pairs of strong facial bristles; a row of very fine hairs at each parafacial suture; parafacies narrow, bare. One pair of proclinate and one pair of reclinate fronto-

orbitals, the ocellars more widely separated than posterior ocelli, situated at a level about midway between bases of fronto-orbitals and anterior ocellus; the postocellars half the length of ocellars; inner and outer verticals strong. A pair of strong humerals; notopleurals strong, both pairs located near the notopleural suture, the anterior pair slightly closer to the posterior pair than to the humerals; presuturals, supra-alars and prescutellars strong; a somewhat weaker pair of postalars; lateral and apical pairs of scutellars each about as long as prescutellars. Mesonotal and discal setulae numerous and nonseriate; notopleura and mesopleura with sparse setulae. Bristles and setae of legs and abdomen rather strong; no flexor armature on femora. Second costal section of wing 2,2 times as long as third; apex of second vein not noticeably curved into costa.

Holotype female, allotype male, MASATIERRA, Plazoleta del Yunque, 200 mteers, 9 January, 1952, (in dense forest).

Most closely related to *Discocerina* (*Basila*) *puella* (Cresson) from Chile, but that species has the wings hyaline, the body much duller, pollinose above and the tarsi entirely yellow. *Discocerina* (*Basila*) *polita* (Edwards) from Chile is a polished, metallic black species with hyaline wings.

Subfamily NOTIPHILINAE

Genus **Hydrellia** Robineau-Desvoidy

Hydrellia vulgaris Cresson

Hydrellia vulgaris Cresson, 1931, Dipt. Patagonia and South Chile, Part VI, fasc. 2, p. 94 (Type locality, Peulla, Chile); Cresson, 1947, Trans. Amer. Ent. Soc. (Guatemala, Bolivia).

MASATIERRA, 1 male, 1 female, Bahía Cumberland, 24 February 1951.

Subfamily PARYDRINAE

Genus **Hyadina** Haliday

Hyadina certa Cresson

Hyadina certa Cresson, 1931, Dipt. Patagonia and South Chile, Part VI, fasc. 2, p. 101 (type locality, Castro, Chile).

MASATIERRA, 1 male, Bahía Cumberland, 1 March 1951; 1 male, Plazoleta del Yunque, 200 meters, 9 January 1952 (in dense forest). MASAFUERA, 3 males, 3 females, Quebrada de las Casas, 13 January 1952; 3 females, Quebrada de las Vacas, 17 January 1952; 1 male, La Correspondencia, 1300 meters, 20 January 1952.

Subfamily EPHYDRINAE

Genus **Dimecoenia** Cresson

Dimecoenia caesia (van der Wulp)

Ephydra caesia van der Wulp, 1883, Tijd. v. Ent. 26: 58 (type locality, Argentina)
Dimecoenia caesia, Cresson, 1931, Dipt. Patagonia and South Chile, Part VI, fasc 2, p. 104 (Argentina, Uruguay; redescribed)

Masatierra, 3 males, Bahía Cumberland, 1, 24 March 1951. Santa Clara, Corral, 8 males, 11 females, 6 January 1952 (damp place).

Genus **Scatella** Robineau-Desvoidy

The sixteen Juan Fernández species of *Scatella* collected by Father Kuschel, all new and endemic, appear to have evolved from two parent stocks. *Scatella kuscheli* differs from all the remaining species and resembles more closely typical *Scatella* from other regions in having a more prominent and setulose face with three of four strong facials and typically five-spotted wing. This species probably represents a more recent introduction. The principal stock, and apparently a very primitive one somewhat related to *Scatophila*, probably gave rise to all the remaining species. This group is characterized by the relatively low facial profile, with only two pairs of strong upper facials and a relatively small setulose medifacies; the mesonotal setulae are seriate and confined principally to the acrostichal and dorsocentral rows; the lateral scutellars are well developed and the lobes of the ninth tergite of the male genitalia are usually bluntly pointed or rounded with a tendency toward the formation of lightly sclerotized windows and a heavily sclerotized aedeagal sheath. A number of the species of this group resemble some of the New Zealand species described by Tonnoir and Malloch (1926) in having darker clouds on the wings. Additional specializations of this group which have not appeared elsewhere in the genus are found in the species with a pale spot in the marginal cell, in those developing an unusually pale, yellowish color and in the five species with rudimentary wings.

Wing reduction in the Ephydridae has occurred in several species, all from the Southern Hemisphere: *Amalopteryx maritima* Eaton from Macquarie, Heard, Crozet and Kerguelen Islands; *Synhoplos sturdeanus* Lamb and *S. neglectus* Lamb from the Falkland Islands and *Scatophila curtipennis* Becker from Tierra del Fuego. Seguy (1940) has compared the wing venation of these species in connection with his very complete redescription of *Amalopteryx maritima*. In all these species the reduction in venation has been more complete than in any of the Juan Fernández

species until in *Synhoplos* no venation is evident. Each Juan Fernández species of brachypterous *Scatella* seems to have evolved independently from a fully winged parent species rather than all from one line.

In the Subantarctic islands, flightlessness is held to be correlated with barren, windswept, and unsheltered habitats where weak-flying insects would be swept out to sea and lost (Hesse, Allee and Schmidt, 1937; Stachell ,1950, Harrison, 1953). Opposed to this view, at least with respect to conditions in the dense forests of the Hawaiian Islands, is that of Zimmerman (1948) who holds that the flightless Hawaiin insects are «hopeful monsters» which «have been fortunate in being developed within a friendly environment with quantities of food so easily attainable that the loss of the powers of flight has not been a form of «lethal mutation», and they have had no enemies which might overwhelm them.»

Father Kuschel's remarks (in litt.) with respect to the habits of the Juan Fernández ephydrids indicate that Zimmerman's opinion would also apply to these brachypterous flies, since they are found in the dense woods rather than on the windswept beaches: «Many species of the Ephydridae seem to occur very locally. Almost all are found within the thick stands of forest where the ground is always very damp. Where the ground is somewhat bare and there is foliage, some brachypterous forms are relatively numerous but often hard to see because the sun seldom shines on the forested regions and the crowns of the trees do not let the little light through. The species with shortened wings hop around quickly on the ground. When the ground is very wet after a heavy rain, the brachypterous species, can frequently be beaten from ferns or more often be found on the large leaves of the *Gunnera* species.»

Palloptera guttipennis Bigot, described from Tierra del Fuego, is in reality a species of *Scatella* closely related to *vulgata* Cresson, as pointed out by Edwards (1933). The presence of a pale wing spot in the marginal cell allies it also with a number of the Juan Fernández species, but the wing pattern otherwise differs markedly from that of any of them.

Since *Scatophila curtipennis* Becker has two pairs of fronto-orbitals and three pairs of strong dorsocentrals, it cannot be a *Scatophila* or a *Scatella*, but since Becker does not mention the acrostichals and the figure does not show the chaetotaxy accurately, it is not clear whether this species might belong to *Neoscatella*, *Parascatella*, *Lamproscatella* or some other genus of Ephydrinae.

The brachypterous fly *Chamaebosca microptera* Speiser (1903, Berlin Ent. Zeitschr. 48 : 65) from Valdivia, Chile, was assigned by Speiser to the Ephydridae. The original description and figure of the wing gave so few clues to identity of the species that its family position has since remained in doubt. At my request Dr. Helmut Mayer, of the Naturhistorisches Museum in Vienna, examined the type of *microptera* and concluded

that this species is an Anthomyzidae. Dr. Mayer's notes on the type are quoted below for the benefit of students of the Anthomyzidae:

«Scheitelplatten reichen bis weit nach vorne und tragen 2 nach rückwärts gekrümmte Borstenpaare (ors), von denen die vorderen kürzer sind. Die unscheinbaren pvt convergieren. Gesicht nicht vortretend, Wangen und Backen sehr schmal. Vi vorhanden, Präapicale der Schienen fehlen. Vorderschenkel mit ventralem Borstendorn. Thorax mit 2 dc, 2 st, 4 sc, davon die vorderen kürzer.

«Kopf: vte., vti., oc., 2 Paar orb., retrocliniert, vordere kürzer; pvt. minutiös, convergent; 2 Paar kräftige vi, am oberen Mundrand, darunter 2 Paare minutiöser Börstchen am Seitenrand und 3 weitere Paare am rückwärtigen Seitenrand der Mundöffnung. Stirndreieck gross, bis nach vorne reichend.

«Thorax: 1 schwache h., 2 npl., 2 dc., 2 st., davon die vordere schwächer, 1 sa., 2 sc., davon die basale schwächer und auf die Scheibe gerückt.

«Vorderschenkel: Neben den normalen Borsten noch ein stärkerer, ventraler Borstendorn im distalen Drittel.»

Key to the Juan Fernández species of *Scatella*

1. Wings fully developed, about as long as body and about one-third as broad as long 2
— Wings reduced to narrow rudiments not more than three-fourths as long as body and not more than a fifth as broad as long 12
2. Wing without pale spot in marginal cell, not more than six pale spots present 3
— Wing with pale spot in marginal cell 6
3. Wing with darker subapical cloud in addition to the pattern of six pale spots on a dark ground; pale yellowish species with dark legs and abdomen ..... 1. *lutea* n. sp.
— Wing without darker subapical cloud 4
4. Pale spots at apices of submarginal and first posterior cells; pale grayish brown species, face and third antennal segment yellow ..... 2. *pallida* n. sp.
— No pale spots in apices of submarginal and first posterior cells 5
5. Face gray; halteres pale brown; two pairs of strong facials ..... 3. *fernandezensis* n. sp.
— Face and halteres dark brown; three or four pairs of strong facials ..... 4. *kuscheli* n. sp.

6. Pale spots present in apices of submarginal and first posterior cells 7

— Pale spots absent in apices of submarginal cells; wing with six spots ..... 5. *discalis* n. sp.

7. Wing with a darker subapical cloud in addition to the pattern of pale spots on a dark ground ..... 6. *marginalis* n. sp.

— Wing without darker subapical cloud 8

8. Face entirely brown; pale spot present in third posterior cell (if rarely absent, fore tarsi of male with long ventral hairs); wing with ten spots 9

— Face silvery, or gray at least on foveae; pale spot absent in third posterior cell; wing with seven to nine spots 10

9. Mesonotum with a pair of sutural white spots above notopleura; fore tarsi of male without long ventral hairs 11

— Mesonotum without sutural whitish spots; fore tarsi of male with long ventral hairs; frontal triangle dull ..... 7. *pilimana* n. sp.

10. Face with antennal foveae (♀) or all but median protuberance (♂) gray; wing with eight spots; general color dark brown .. 8. *masatierrensis* n. sp.

— Face silvery; wing with five to seven spots; general color pale grayish brown ..... 9. *argentifacies* n. sp.

11. Frontal triangle dull; mesonotum with pruinose vittae ..... 11. *vittata* n. sp.

— Frontal triangle shining; mesonotum not vittate ..... 10. *decemguttata* n. sp.

12. Wing rudiment with several pale spots 13

— Wing rudiment without pale spots, entirely dark brown 14

13. Pale spot present in marginal cell; discal cell acutely pointed distally; large species (3,5 mm.) ..... 12. *stenoptera* n. sp.

— Pale spot absent in marginal cell; discal cell truncate distally; small species (less than 2,5 mm.) ..... 13. *angustipennis* n. sp.

14. Lateral scutellars about two-thirds as long as apical pair; wing very short and narrow, discal cell entirely absent ..... 16. *minima* n. sp.

— Lateral scutellars less than half as long as apical pair; discal cell complete 15

15. Wing narrow from base to apex; discal cell acutely pointed distally, the posterior crossvein obsolete ..... 14. *nanoptera* n. sp.

— Wing broader at base, shorter and more strongly tapered; discal cell not narrowed distally, posterior crossvein present and transverse..... 15. *brachyptera* n. sp.

1. **Scatella lutea** Wirth, new species (Figures 2, 18)

♂, ♀. Length about 3 mm., wing 3,0 mm. by 1,4 mm.

Tawny yellow; tibiae, tarsi and apices of hind femora brown; abdominal tergites subshining dark brown; all bristles and setae black. Wing veins yellow at base of wing, brown on distal two-thirds; wing with pattern as in figure 2, a large dark cloud across apices of marginal and submarginal cell, six typical pale spots, the distal one in first posterior cell very large.

Arista short pubescent on basal half. Frons three times as broad as long, the two pairs of fronto-orbitals, inner (exceptionally long) and outer verticals and ocellars long, postocellars minute (long in the male allotype). Face not strongly developed; two pairs of small facials in addition to the pair of very strong upturned genal bristles, in male the second pair of facials reduced, the triangular area below the facials very sparsely setose, a pair of contiguous setae just above upper facials; oral cilia quite long but not numerous; antennal foveae well developed; parafacies with a few setae in a row; postbuccae setulose, with a long ventral bristle.

One pair of presutural acrostichals, two pairs of postsutural dorsocentrals, one pair of presuturals, two pairs of notopleurals, a pair of supra-alars, a pair of intra-alars, a pair of mesopleurals, a pair of sternopleurals and two pairs of marginal scutellars, all strong and not differing greatly in length, but lateral scutellars two-thirds as long as apical pair. A few setulae in line cephalad of acrostichals and dorsocentrals and three pairs of setae in a series laterad of dorsocentral series; mesopleura sparsely setulose. Legs normal, with hairs short; a long hair on side of mid coxae; fore femora of male with a posteroventral row of moderately long bristles.

Abdomen of male with fifth tergite as long as the remaining four combined. Male genitalia (figure 18) with the anterior lobes of the ninth tergite short and angular, the apical points broadly separated, the anteromesal margins with long setae. Tubular sheath of the aedeagus not strongly sclerotized.

Holotype female, Masatierra, Salsipuedes, 300 meters, 5 March, 1951. Allotype male, 1 female paratype, same data as type. Paratypes: 1 male, 1 female, Plazoleta del Yunque, 200 meters, 9 January 1952 (in dense forests); 1 female, Miradero de Selkirk, 550 meters, 15 February 1951.

2. **Scatella pallida** Wirth, new species

♂. Length about 2 mm., wing 2,3 mm by 0,9 mm.

Pale dull brown, obscured by heavy gray pollen; palpi and third antennal segments yellow; face yellow, with heavy yellowish gray pollen; halteres pale yellow. Wing veins brown, membrane smoky gray, with pattern of six round spots as follows: one at apex of submarginal cell and one at apex of first posterior cell; two more in first posterior cell, equidistant from posterior crossvein; one in discal cell just proximad of posterior crossvein and one the same distance beyond crossvein in second posterior cell.

Chaetotaxy normal; facials relatively long and slender; lateral scutellars half the length of apical pair; fore legs of male unmodified; fifth tergite of male as long as third and fourth combined.

Holotype male, MASATIERRA, Plazoleta del Yunque, 200 meters, 9 January 1952 (in dense forest). 1 male paratype, same data as type.

3. **Scatella fernandezensis** Wirth, new species (Figures 3, 14)

♂, ♀. Length about 2,7 mm., wing 2,3 mm. by 1,0 mm.

Subshining dark brownish black; medifrons dull; face densely gray pollinose; humeri and some lights on pleura gray pruinose; halteres pale brown. Wings smoky dark brown, unusually broad (figure 3), with obscure pattern of five very faint spots (located as in *stagnalis* (Fallen) and *kuscheli* n. sp.), of which several or all may disappear (only the spot in discal cell present in holotype).

Chaetotaxy normal; facial bristles and oral cilia long and slender; marginal scutellars two-thirds as long as apical pair; fore legs of male normal; fifth tergite of male as long as third and fourth combined. Male genitalia with lobes of ninth tergite rather pointed and setose, the hypophysal arch not extending cephalad past their apices; sclerotized basal arch of aedeagal sheath broadly V-shaped (figure 14).

Holotype male, MASATIERRA, Salsipuedes, 300 meters, 5 March 1951. Allotype, Masatierra, Bahía Cumberland, 2 March 1951. Paratypes: Masatierra, 1 male, same data as allotype; 2 males, Pie del Yunque, 300 meters, 11 March 1951; 1 female, El Yunque, 915 meters, 10 February 1952 (on almost marshy ground in dense forest); 1 male, Alto Pangal, 8 February 1952; 1 male, 1 female Miradero de Selkirk, 550 meters, 15 February 1951 (the female headless, pale and teneral, and not made a paratype).

[1] *Scatella pulla* Cresson from Castro, Chile, is closely related, but differs in having the lateral scutellars less than half as long as apical pair, the medifrons is shining and the face of the female is brown with contrasting cinereous foveae.

4. **Scatella kuscheli** Wirth, new species (Figures 4, 17)

♂, ♀. Length about 2,5 mm., wing 2,5 mm. by 1,0 mm.

Subshining dark brown, almost black, dorsum with purplish tone; antennal foveae, pleura and venter dark gray pollinose, nearly black; medifrons dull; halteres dark grayish brown; abdomen subshining blackish. Wing veins and membrane dark brown, wing with five very faint pale spots in typical «*stagnalis*» pattern (figure 4).

Chaetotaxy normal, as described for *lutea*, n. sp. Face differs from the other Juan Fernández species and more closely resembles some species from the mainland and from other regions in its greater height, with vertical, heavily setose medifacies and more numerous (three or four), but not stronger, facial bristles. Mesonotal setulae also more numerous, with three or four postsutural acrostichal pairs. Lateral scutellars quite stout and about half the length of the apical pair. Legs with numerous strong setulae and posteroventral rows of bristles well developed; fore legs of male normal. Male abdomen tapering distally, the fitfh tergite as long as second to fourth combined. Male genitalia (figure 17) with lobes of ninth tergite rounded and setose, basal sclerotization of sheath of aedeagus a transverse band with two short, submedian, anterior protuberances.

Holotype male, allotype, MASAFUERA, Quebrada de las Casas, 25 January 1952. Paratypes: Masafuera, 3 males, 5 females, same data as type; 1 male, Quebrada de las Vacas, 17 January 1952; 35 males, 57 females, Varadero, (on algae on the shore) 27 January 1952. MASATIERRA, 1 female, Alto Inglés, 600 meters, 6 February 1952; 15 males, 9 females, Pangal, Muelle de Piedra, 4 January 1952 (intertidal rocks).

5. **Scatella discalis** Wirth, new species (Figure 5)

♀. Length about 2,8 mm., wing 2,8 mm. by 1,1 mm.

Subshining brownish black; antennal foveae gray pollinose; sparse grayish brown pollen on sides and venter of body; frontal triangle dull. Halteres yellow. Wing dark brown, especially on anterior half, with pattern of six pale discal spots as in figure 5. Chaetotaxy normal, two pairs of facials well developed; no postsutural acrostichal setuale; lateral scutellars about a third as long as apical pair.

Holotype female, MASATIERRA, El Yunque, 915 meters, 10 February 1952 (on almost marshy ground in dense forest).

6. **Scatella marginalis** Wirth, new species (Figures 1, 15)

♂, ♀. Length about 3,8 mm., wing 3,9 mm. by 1,6 mm.

Rich dark brown, dorsal surfaces including medifrons dull to slightly subshining; third antennal segments yellowish brown; antennal foveae,

cheeks, occiput, postscutellum and sutural margins of pleural sclerites gray dusted; face of male entirely cinereous. Halteres yellow. Wing veins brown, wing membrane brown, with pattern as in figure 1; a darker cloud over ends of marginal, submarginal and anterior side of first posterior cells; eight pale spots including an unusual one in middle of marginal cell contiguous with the one in the middle of the submarginal cell.

Chaetotaxy normal, as described for *lutea* n. sp. Arista sparsely pubescent nearly to tip, postocellars rudimentary, small setae in line between fronto-orbitals, a few postsutural setae in acrostichal series; lateral scutellars slightly over half the length of the apical pair. Legs normal. Abdomen of male with fifth tergite broad at apex, as long as basal four tergites combined. Male genitalia (figure 15) with lobes of ninth tergite short and very broad anteriorly, with bluntly pointed, hairy, mesal apices. The cylindrical sheath inside the arch of the gonapophyses heavily sclerotized and produced ventrad as a bluntly conical projection between the apices of the ninth tergite and the gonapophysal claspers.

Holotype female, MASATIERRA, Miradero de Selkirk, 550 meters, 15 February 1951. Allotype male, 1 male, 1 female paratypes, same data as type.

7. **Scatella pilimana** Wirth, new species (Figures 6, 19)

♂, ♀. Length about 2,8 mm., wing 2,7 mm. by 0,9 mm.

Unicolorous dull brown, dorsum very slightly sub-shining; medifrons and face heavily pollinose brown; antennae black; halteres yellow; wing, veins and membrane brown; wing with pattern of ten small round spots as in figure 6, distal spot in first posterior cell faint and sometimes obsolete.

Chaetotaxy normal, as described for *lutea* n. sp.; arista pubescent nearly to tip; antennal foveae very deep making the facial protuberance appear sharp and narrow above, the two pairs of facials rather long, only a few setulae below and none above the facials; postocellars not developed; lateral scutellars only about a third as long as apical pair; no postsutural acrostichal setulae, the presutural setulae in dorsocentral and acrostichal series complete to anterior margin of thorax. Fore tarsi of males with about ten, long, slender, curved, modified hairs in anteroventral series and ten in posteroventral series on first three segments. Fifth tergite of male about as long as third and fourth combined. Ninth tergite (figure 19) of male very short with broad, setose, apical lobes, the anterior margins with a sclerotized band leaving behind a hyaline mesal window; the claspers and gonopophysal arch strongly developed cephalad with the tubular sheath of the aedeagus heavily sclerotized only in a basal band next to the ninth tergite. Female abdomen with distal segments laterally

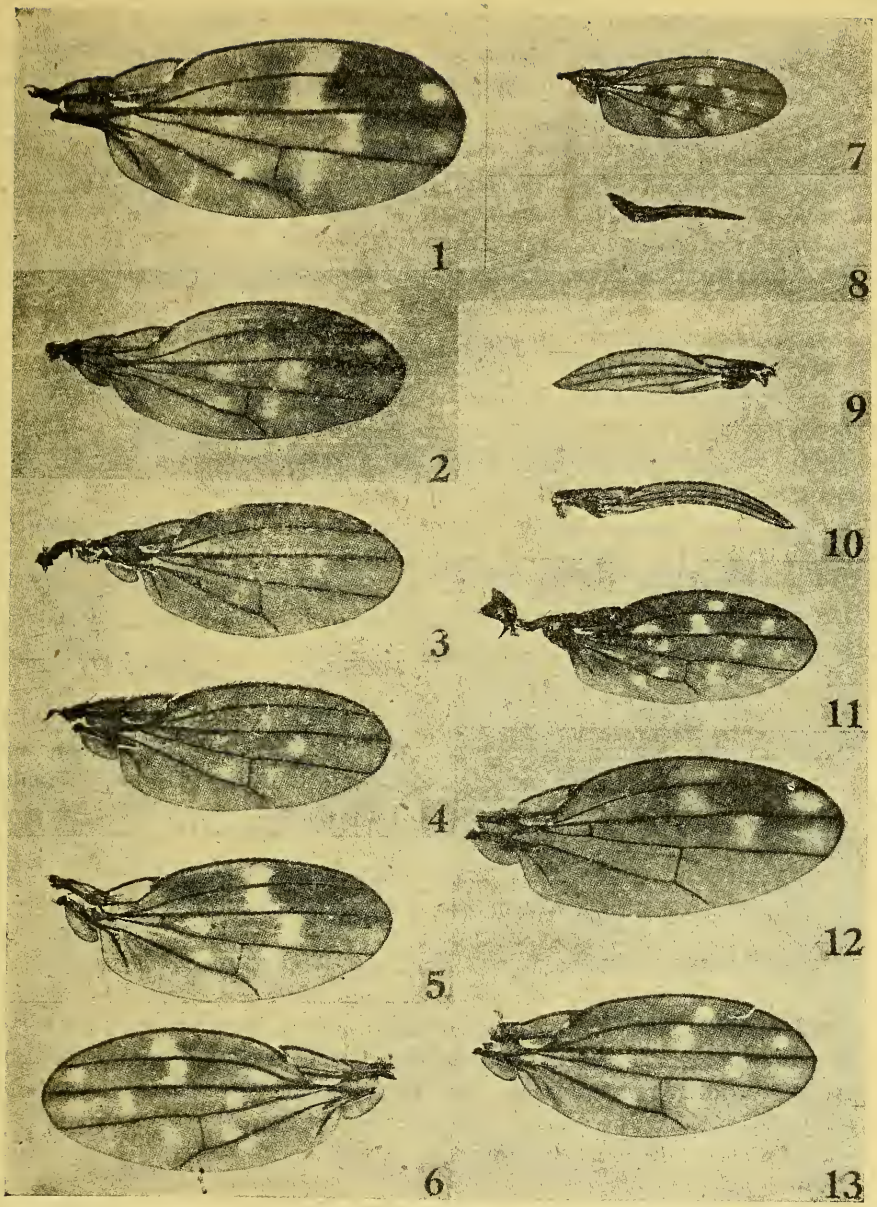

Plate I. Wings of Ephydridae.

Figure 1. *Scatella marginalis* n. sp.
2. *Scatella lutea* n. sp.
3. *Scatella fernandezensis* n. sp.
4. *Scatella kuscheli* n. sp.
5. *Scatella discalis* n. sp.
6. *Scatella pilimana* n. sp.
7. *Scatophila medifemur* n. sp.

Figure 8. *Scatella minima* n. sp.
9. *Scatella brachyptera* n. sp.
10. *Scatella nanoptera* n. sp.
11. *Scatella decemguttata* n. sp.
12. *Scatella argentifacies* n. sp.
13. *Scatella masatierrensis* n. sp.

compressed and bearing a prominent ovipositor composed of a caudal heel-like plate with a pair of long sharp spines protruding caudally from the ventral angle.

Holotype male, allotype female, MASAFUERA, Inocentes Altos, 1.300 meters, 22 January 1952 (on *Dicksonia* steppe). Paratypes: Masafuera, 3 males, 4 females, same data as type; 2 males, 1 female, Inocentes Bajos, 1.000 meters, 27 January 1952; 1 male, Las Chozas, 700 meters, 14 January 1952; 2 females, La Correspondencia, 1.300 meters, 20 January 1952.

8. **Scatella masatierrensis** Wirth, new species (Figures 13, 21)

♂, ♀. Length about 2,8 mm., wing 2,7 mm. by 1,1 mm.

Nearly identical with *Scatella pilimana* n. sp. but differing as follows: Male face nearly entirely gray pollinose, only the top of the median protuberance forming a brown dot, only antennal foveae of female gray, male fore legs normal, tarsi without long ventral hairs; wing slightly broader (figure 13), pale spot in marginal cell placed further distad, never contiguous with pale spot in middle of submarginal cell. The male genitalia (figure 21) differ from those of *pilimana* in having the basal sclerotization of the tubular sheath more extensive, forming a trapezoidal, anteriorly notched, plate in ventral view.

Holotype male, MASATIERRA, Alto Inglés, 600 meters, 6 February 1952. Allotype, female, Masatierra, Miradero de Selkirk, 500 meters, 21 December 1951. Paratypes: 1 male, same data as allotype; 1 male, 2 females, El Yunque, 915 meters, 10 February 1952 (almost marshy ground in dense forest).

This species is evidently the counterpart of *pilimana* on Masatierra.

9. **Scatella argentifacies** Wirth, new species (Figure 12)

♂, ♀. Length about 3 mm., wing 3,1 mm., by 1,3 mm.

Uniform pale brownish, with heavy gray pollen more or less obscuring the subshining integument. Face contrasting silvery white. Halteres yellowish white. Wing veins brown, membrane lightly gray fumose, with pattern of five to seven pale spots sa in figure 12, the ones in middle of marginal, submarginal and first posterior cells and in apices of submarginal and first posterior cells large and distinct, but the pair just proximad and distad of the posterior crossvein may scarcely be evident.

Chaetotaxy normal, as described for *lutea* n. sp.; facial bristles and setulae and oral cilia very small. Legs of male normal. Lateral scutellars about two-thirds as long as apical pair. Abdomen of male allotype with fifth segment as long as third and fourth combined; female abdomen normal, not laterally compressed at apex.

Holotype female, MASATIERRA, Cerro Alto, 600 meters, 1 February 1952 (in dense, damp forest). Allotype female, 1 male and 1 female paratypes, same data as type.

Related to *pilimana* and *masatierrensis* but very pale brown with more extensive pale wing spots, the face silvery in both sexes and the male tarsi normal.

10. **Scatella decemguttata** Wirth, new species (Figures 11, 16)

♂, ♀. Length about 2 mm., wing 2,3 mm. by 0,9 mm.

Subshining brownish black, medifrons shining; face, antennal foveae, antennae and ocellar tubercle dull brownish black. Four faint bluish pruinose areas on anterior margin of mesonotum. A pair of prominent, round, whitish pollinose spots above notopleura just ahead of transverse suture. Halteres yellowish. Wings dark brown with ten round pale spots as shown in figure 11.

Chaetotaxy normal, facials and oral cilia slender; lateral scutellars about a third as long as apical pair; male legs normal. Setulae of medifacies and of acrostichal and dorsocentral series present but very small. Male fifth tergite as long as third and fourth combined. Male genitalia (figure 16) of the structure found in *pilimana* n. sp., with short, bluntly lobed ninth tergite with hyaline window, but the anterior lobes are slightly more acutely rounded mesad, the tubular sheath is more heavily sclerotized and the gonopophysal arch and claspers are not so stout.

Holotype male, allotype female, MASAFUERA, La Correspondencia, 1.300 meters, 20 January 1952. Paratypes: Masafuera, 3 males, 4 females, same data as type; 1 male, 1 female, Inocentes Altos, 1.300 meters, 22 January 1952 (*Dicksonia* steppe); 1 male, 1 female, Inocentes Bajos, 1.000 meters, 27 January 1952; 3 males, 3 females, Quebrada de las Vacas, 17 January 1952; 3 females, Quebrada de las Casas, 19 January 1952. MASATIERRA, 2 males, 4 females, Plazoleta del Yunque, 200 meters, 20 February 1951 (in dense woods); 1 female, Bahía Cumberland, 24 February 1951; 1 female, Grutas, Bahía Cumberland, 17 February 1951; 1 female, Villagra, 250 meters, 21 February 1951. SANTA CLARA, 2 females, Corral, 6 January 1952 (damp place).

This species and the next one, *vittata* n. sp., form a group distinguished by the subshining, blackish color, ten wing spots and a pair of whitish sutural spots on the mesonotum.

11. **Scatella vittata** Wirth, new species

♂, ♀. Length about 2 mm., wing 2,0 mm. by 0,8 mm.

Dark brownish black, subshining on dorsum; medifrons dull black; antennal foveae, occiput, humeri, postscutellum, portions of pleura near

sutures, bluish gray pruinose. Mesonotum with two pairs of wellmarked, dull grayish brown vittae, one pair between acrostichal and dorsocentral series, the other pair laterad of dorsocentral series; a pair of gray pollinose spots present above notopleura in front of suture. Halteres yellow. Wings dark brown, with ten small round pale dots in positions as figured for *decemguttata* n. sp., but very faint, sometimes scarcely evident.

Chaetotaxy normal; facial bristles not strong; setulae in acrostichal and dorsocentral series weak and confined to presutural area. Lateral scutellars a third as long as apical pair. Fore legs of male normal. Fifth tergite of male scarcely as long as three and four combined.

Holotype male, allotype female, MASATIERRA, Cerro Alto, 600 meters, 1 February 1952 (in dense, damp forest). Paratypes: 2 males, 4 females, same data as type; 2 females, Masatierra, El Yunque, 95 meters, 10 February 1952 (on almost marshy ground in dense forest).

Related to *decemguttata* n. sp., as evident by the wing maculation, the sutural mesonotal pollinose spots and general features, but readily separated by the dull medifrons, vittate mesonotum and faint wing spots.

12. **Scatella stenoptera** Wirth, new species

♀. Length about 3,5 mm., wing 2,7 mm. by 0,33 mm.

Subshining brownish black with dark brown pollen except antennal foveae and distal bands on abdominal tergites which are distinctly grayish pollinose. Halteres dark brown. Wing brownish black, with four spots as follows: one in middle of marginal cell; one contiguous to it just behind in submarginal cell, and two in first posterior cell, with one just in front of apex of discal cell and the other nearly midway between marginal cell spot and wing tip. Wing slightly shorter and much narrower than normal; venation as figured for *nanoptera* n. sp. (figure 10); third vein ends at wing tip and second and fourth veins are only slightly shorter; the fourth vein running parallel and nearly contiguous with hind wing margin; discal cell acutely pointed distad, the posterior crossvein obsolete.

Chaetotaxy normal, the face prominent toward lower margin with two pairs of long facials in addition to the long genal pair; about five pairs of well developed, postsutural, acrostichal setulae; marginal scutellars about three-fourths as long as apical pair. Legs stout, otherwise normal,

Holotype female, MASATIERRA, Plazoleta del Yunque, 200 meters. 1 February 1952 (in dense forest, hopping on ground).

This species was probably derived from a species similar to *marginalis* n. sp. or *discalis* n. sp. with a full, long-bristled face with gray foveae as in the former and contiguous pale spots in the middles of the marginal and submarginal cells, but with none in the apices of these cells, as in the latter species.

13. **Scatella angustipennis** Wirth, new species

♀. Length about 1,8 mm. (without head); wing 1,6 mm. by 0,35 mm.

Head missing! Subshining brownish black; very sparse blackish pollen on lateral and ventral surfaces and near sutural margins of segments; a pair of presutural, whitish pollinose spots above notopleura. Halteres dark brown. Wings brownish black, with four pale spots in two groups: Two contiguous spots in middles of marginal and submarginal cells respectively, and two contiguous spots, one in apex of discal cell and another just ahead of it in first posterior cell. Wing nearly of normal length, but much narrowed as in *nanoptera* n. sp., and with the discal cell longer, slightly broader distad and posterior crossvein forming a truncated apex. Wing rather broader at level of discal cell, middle third becoming much narrower distad, then subapical section with subparallel margins just before the pointed apex. Chaetotaxy normal, so far as apparent; scutellars missing. Legs slightly stouter than normal.

Holotype female, MASAFUERA, Inocentes Bajos, 1.000 meters, 27 January 1952 (on *Dicksonia* steppe).

The small size, subshining surface, and presence of small mesonotal whitish spots, as well as the pale spot in the marginal cell, allies this species with *decemguttata* n. sp. and *vittata* n. sp.

14. **Scatella nanoptera** Wirth, new species (Figure 10)

♂, ♀. Length about 2,5 mm., wing 1,9 mm. by 0,25 mm.

Subshining dark brownish black; third antennal segment and halteres pale brown; entire face (♂) or antennal foveae (♀) gray pollinose; wings dark brown, without pale spots. Wings reduced to narrow rudiments with venation as in figure 10; discal cell small and tapered apically; fifth vein acutely entering fourth vein near base of latter. Chaetotaxy normal; two pairs of moderately strong facials in addition to the pair of prominent genals at lower corners; facial setulae very small and fine; three or four pairs of well developed, postsutural acrostichal setulae; lateral scutellars two-thirds as long as apical pair. Femora unusually stout; fore legs of male not modified. Fifth tergite of male scarcely as long as three and four combined; genitalia similar to those of *brachyptera*.

Holotype male, allotype, MASATIERRA, Plazoleta del Yunque, 200 meters, 9 January 1952 (in dense forest). Paratypes: Masatierra, 8 males, 10 females, same data as type; 4 males, Bahía Cumberland, 4 January 1952; 1 female, Miradero de Selkirk, 550 meters, 15 Febrary 1951; 1 female, El Camote, 350 meters, 17 March 1951.

Except for the greatly reduced wings, *nanoptera* closely resembles *fernandezensis*, n. sp., and it is possible that it arose as a mutation from the ancestors of that species.

The fact that the two species were never collected together although both occur on the same island in some of the same general localities would indicate that *nanoptera* is not a mutant from the *fernandezensis* population, but that it is a distinct species.

15. **Scatella brachyptera** Wirth, new species (Figures 9, 10)

♂, ♀. Length about 2,5 mm., wing 1,5 mm. by 0,3 mm.

Subshining dark brown, almost black, antennae and halteres very dark brown; face and pleura with very slight dark gray pruinosity. Wings uniformly dark brown, without light spots; with venation as in figure 9, discal cell not narrowed apicad, but closed by the transverse posterior crossvein. Chaetotaxy normal, two pairs of strong facials, the facial setulae very small; two pairs of small, postsutural, acrostichal setulae; lateral scutellars about two-thirds as long as apical pair. Legs stout, especially the femora; male fore legs unmodified. Male genitalia (figure 20) with ninth tergite short, the setose lobes bluntly rounded cephalad, with a well developed hyaline window in cleared specimen; sheath of aedeagus appearing in ventral aspect as a conically pointed, sclerotized structure with narrow basal arms; claspers of gonopophyses short and slender.

Holotype female, MASATIERRA, El Yunque, 915 meters, 9 February 1952 (on almost marshy ground in dense forest). Allotype male, Masatierra, Plazoleta del Yunque, 200 meters, 9 February 1952 (in dense forest) [on slides]. Paratypes: 1 female, same data as allotype; 1 female, Pie del Yunque, 300 meters, 21 March 1951.

This species is very closely related to *nanoptera* n. sp., and can be separated from it only by the shorter, strongly tapering wings, and by the very dark third antennal segment.

16. **Scatella minima** Wirth, new species (Figure 8)

♂. Related to *brachyptera* n. sp., with the following differences: Much smaller, length about 1,9 mm., wing 1,0 by 0,13 mm. the abdomen relatively stout and globular. Wing rudiment very short and narrow, only three longitudinal veins, discal cell absent (figure 8). Lateral scutellars not quite halft as long as apical pair.

Holotype male, MASATIERRA, Pie del Yunque, 300 meters, 21 March 1951.

Genus **Scatophila** Becker

Scatophila medifemur Wirth, new species (Figure 7)

♂, ♀. Length about 2,6 mm., wing 2,7 mm. by 0,65 mm.

Dark brown with bluish-gray pruinose markings; antennae, palpi and legs blackish, halteres and basitarsi yellowish; face dull brown pollinose.

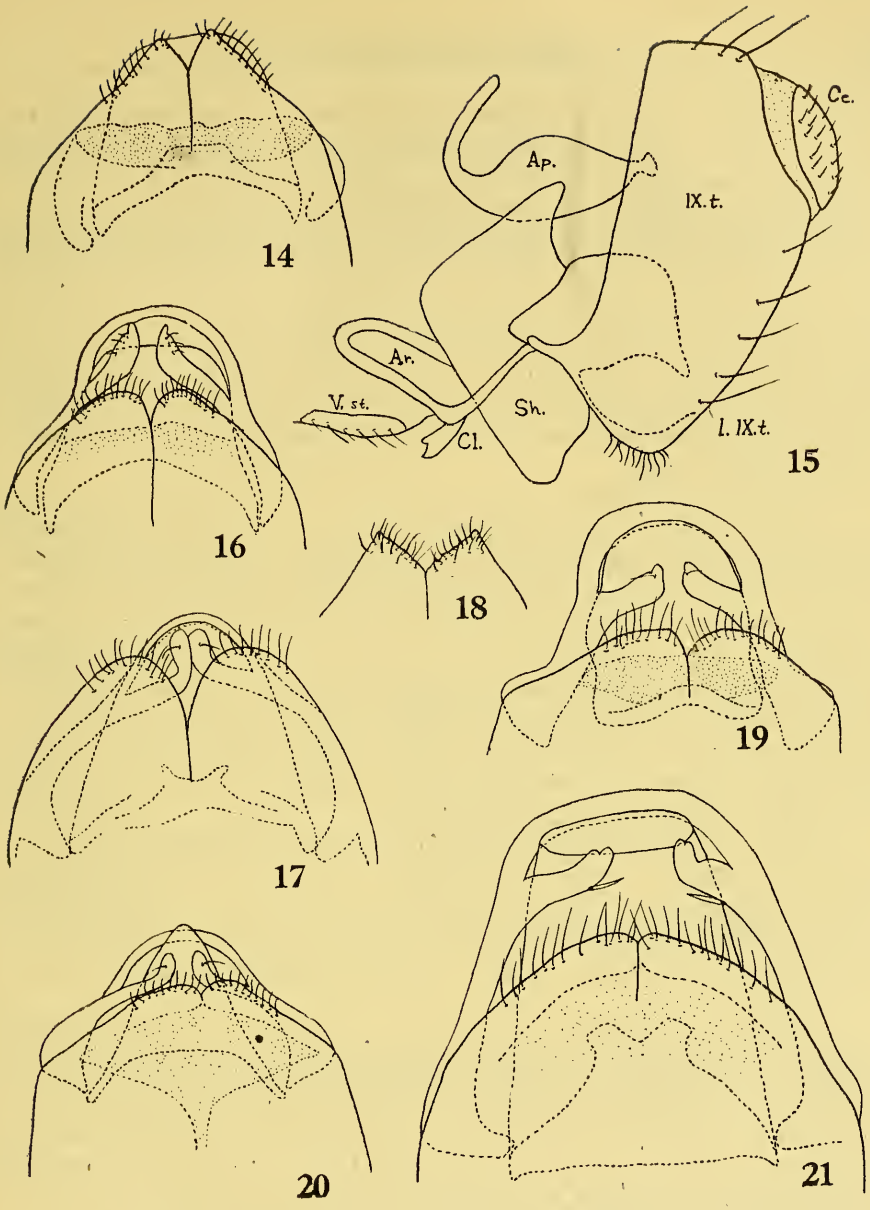

Plate II. Male genitalia of *Scatella* spp.

Figure 14. *Scatella fernandezensis* n. sp., ventral view of lobes of ninth tergite (with setae) with outline of sclerotized sheath of aedeagus.

15. *Scatella marginalis* n. sp., lateral view showing ninth tergite (IX. t.), lobes of ninth tergite (l. IX. t.), cerci or anal lamellae (Ce.), fifth sternite (V. st.), gonapophysal arch (Ar.), gonapophysal claspers (Cl.), sclerotized sheath of the aedeagus (Sh.) and the aedeagal apodeme (Ap.).
16. *Scatella decemguttata* n. sp., as in fig. 14, also with gonapophysal arch and claspers.
17. *Scatella kuscheli* n. sp., as in fig. 16.
18. *Scatella lutea* n. sp., lobes of ninth tergite.
19. *Scatella pilimana* n. sp., as in figure 16.
20. *Scatella brachyptera* n. sp., same.
21. *Scatella masatierrensis* n. sp., same.

The following bluish-gray pruinose: a trilobate area on anterior margin of frons above antennae; cheeks, occiput, sternopleura, lower sides of mesopleura, metapleura, postscutellum, humeri, margins of notopleura, a pair of elongate marks on anterior margin of mesonotum between acrostichal and dorsocentral series and a pair of smaller post-sutural marks just laterad of anterior dersocentrals, a wedge-shaped median prescutellar mark, middle of scutellum and segmental bands covering most of abdominal tergites. Extensive areas almost the length of all of femora and tibiae on anterior and posterior sides, polished black. Wings opaque grayish with eight, small, faint, pale spots as in figure 7; two in submarginal, three in first posterior, one in discal, one in second posterior and one in third posterior, cells.

Arista finely pubescent to apex; cheeks about as wide as third antennal segment; face full, the antennal foveae well developed; lower facial strong, upturned; medifacies with sparse, coarse setae; the one frontoorbital, the inner and outer verticals and the ocellar bristle strong, postocellars minute; two strong, post-sutural dorsocentrals only; no strong acrostichals, but a complete series of about six setae in each acrostichal row; marginal scutellars about two thirds as long as apical pair. Fore femur of both sexes strongly narrowed below with a pubescent flexor area on distal half; mid femur of male with a posteroventral series of about eight strong spines, each nearly as long as diameter of tibia; fourth and fifth tergites of male subequal in length.

Holotype male, allotype, CHILE, Coquimbo, Incahuasi, 30 September 1952, G. Kuschel. Paratypes: Coquimbo, 52 males, 48 females, same data as type; 3 males, 6 females, Punta Teatinos, 16 September 1952, Kuschel. SANTA CLARA, 4 males, 2 females, Corral, 6 January 1952 (damp place). MASATIERRA, 1 male, Bahía Cumberland, 24 February 1951.

This species is related to the Chilean *tescola* Cresson, but that species has the face cinereous, the cinereous body markings and pale wing spots are more extensive and the strong, upturned lower facial, the polished black leg markings and the posteroventral spines on the male mid femur are lacking. The Holarctic species, *despecta* (Haliday), is closely related, having the same arrangement of facial and thoracic bristles and body and wing color patterns as well as the posteroventral spines on the male mid femur, but in *despecta* the face is strongly cinereous and the polished leg markings are confined to the posterior sides of the mid and hind pairs.

Scatophila fernandeziana Wirth, new species

♀. Related to *medifemur* n. sp., from which it differs as follows: Size larger, about 2,3 mm., wing 2,2 mm. by 0,8 mm. More cinereous, the face gray pollinose with a few scattered, brown spots; the gray mesonotal spots longer and narrower, almost linear; the polished areas on legs narrower, often entirely absent on one or several legs.

Holotype female, SANTA CLARA, Corral, 6 January 1952 (damp place). Two female paratypes, same data as type.

This species is apparently intermediate between *despecta* (Haliday) and *medifemur* n. sp., but its larger size, cinereous face and very narrow mesonotal and leg markings are distinctive.

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