

THE DIPTERA OF AUCKLAND AND CAMPBELL ISLANDS

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REPORT ON DIPTERA OF AUCKLAND AND CAMPBELL ISLANDS

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INTRODUCTION

Although scientific expeditions called at Auckland and Campbell Islands during the years 1839-40, the first report on their dipterous fauna was not published until 1881. This was the result of study of specimens collected by Dr. Krone of a German Expedition for the observation of the Transit of Venus at Auckland Islands in 1874. Eight species were collected on this expedition, six being new species (Mik 1881).

F. W. Hutton collected on the Islands in 1901 and reported on the Diptera (Hutton 1902). In 1907 the most important scientific expedition to visit the islands to date was organized by the Philosophical Institute of Canterbury. The Diptera collected by this expedition were described by Lamb (1909). L. Cockayne collected a species in 1903 which was described by Edwards (1923) and G. Archey collected a species in 1923 which was described by Edwards (1924).

The most significant publications on the Diptera of these Islands are those by Hutton (*loc. cit.*) and Lamb (*loc. cit.*). Because of their work much of the nature and peculiarities of the Diptera is already known.

The Diptera discussed in this Bulletin were collected from the Auckland and Campbell Islands by members of the Cape Expedition 1941-45 and from Campbell Island by a member of the meteorological unit subsequent to 1945. In all 310 specimens were collected. The Tipulidae, Borboridae (Sphaeroceridae), and Dolichopodidae of these collections are reported on separately in this Bulletin.

In this Bulletin 11 new species are described and 14 species are recorded for the first time from the Islands. The total species now known from Auckland Islands is 58 and from Campbell Island is 39.

THE ENVIRONMENT

The Auckland Islands are wooded on the lower slopes and have tussock or low scrub on the higher altitudes. The islands are windswept but the forest is dense and within the forest conditions are usually calm. Most Diptera were collected near the coast in the wooded areas.

Campbell Island is for the most part bare or covered with tussock and low-lying plants with some low scrub. It also is windswept.

COLLECTING STATIONS

Diptera were not collected extensively on either island and from the collecting data available it would appear that most specimens were obtained near the coast watching stations. Localities are shown in maps published by Falla (1948).

Auckland Islands: Port Ross and environs was one of the most important collecting stations. Most specimens were obtained about the camp site at Ranui Cove or at Lookout Hut area, 300' above the Cove. Ocean Island at the entrance of the Port produced one series of specimens. South of Port Ross one specimen was collected at Haskell Bay. The other important collecting centre was at Carnley Harbour on and about the camp site at Musgrave Peninsula-Tagua Bay area.

Campbell Island: The majority of Diptera collected from this Island have no detailed locality data, but most of them would undoubtedly have been collected about the camp site at the head of Perseverance Inlet. Some specimens were obtained inland at St. Col Ridge 700' and others at Courejolles Point and Shoal Point.

LIST OF KNOWN DIPTERA OF AUCKLAND AND CAMPBELL ISLANDS

Those species marked with one asterisk (*) are present in this collection; those with two asterisks (**) are present and represent a new locality record.

Family *Trichoceridae*

- | | |
|---|--------------|
| * <i>Nothotrichocera antarctica</i> (Edwards, 1923) | Campbell I. |
| <i>Paracladura antipodum</i> (Mik, 1881) | Auckland Is. |

Family *Anisopodidae*

- **Anisopus notatus* (Hutton, 1902) Auckland Is.
 ***Anisopus neozelandicus* (Schiner, 1863) Auckland Is.

Family *Tipulidae*

- Limonia (Dicranomyia) insularis* (Mik, 1881) Auckland Is.
Limonia (Dicranomyia) vicarians (Schiner, 1868) Auckland Is.
 **Limonia (Idioglochina) kronei* (Mik, 1881) Auckland Is.
Zaluscodes aucklandicus Lamb, 1909 Auckland Is.
Limnophila bryobia Mik, 1881 Auckland Is.
 **Gynoplistia (Gynoplistia) resecta* Edwards, 1924 Auckland Is.
 **Erioptera (Trimicra)* sp. Campbell I.
 **Erioptera (Trimicra)* sp. Campbell I.

Family *Psychodidae*

- ***Psychoda acutipennis* Tonnoir, 1920 Campbell I.
 ***Psychoda pulchrima* Satchell Campbell I.
 Auckland Is.

Family *Culicidae*

- **Culex* sp. Auckland Is.

Family *Chironomidae*

- *Undetermined species (A) Campbell I.

Family *Mycetophilidae*

- ***Anomalomyia guttata* (Hutton, 1881) Auckland Is.
 ***Exechia hiemalis* (Marshall, 1896) Campbell I.
 ***Mycetophila marginepunctata* Tonnoir, 1927 Auckland Is.
 **Zygomia submarginata* sp. nov. Campbell I.
 ***Sciara annulata* Meigen, 1818 Campbell I.
 **Sciara rubra* sp. nov. Campbell I.

Family *Simuliidae*

- **Austrosimulium vexans* (Mik, 1881) Campbell I.
 Auckland Is.
Austrosimulium australense (Schiner, 1868) ? Auckland Is.

Family *Stratiomyidae*

- Neactina opposita* (Walker, 1854) Auckland Is.
Oplacantha substituta (Walker, 1854) Auckland Is.
Neoexaireta spiniger (Wiedemann, 1830) Auckland Is.
Octarthria aberrans (Schiner, 1868) Auckland Is.

Family *Therevidae*

- Anabarynychus luridus* Schiner, 1868 Auckland Is.

Family *Asilidae*

- Neotamus varius* (Walker, 1849) Auckland Is.
Saropogon antipodus Schiner, 1868 Auckland Is.

Family *Dolichopodidae*

- *One species Campbell I.

Family *Empididae*

- Hilara smithii* (Hutton, 1901) Auckland Is.

Family *Syrphidae*

- **Helophilus antipodus* Schiner, 1868 Campbell I.
 Auckland Is.
 **Helophilus campbellicus* Hutton, 1901 Campbell I.
 Auckland Is.
Helophilus hochstetteri Nowicki, 1875 Auckland Is.
 **Syrphus novae-zelandiae* Macquart, 1885 Campbell I.
 Auckland Is.

Family *Helomyzidae*

- **Heloclusia antipoda* sp. nov. Campbell I.
 Auckland Is.
 (also Antipodes I.)

Family *Phycodromiidae*

- Baeopterus robustus* Lamb, 1909 Campbell I.
 Auckland Is.
 **Chaetocoelopa littoralis* (Hutton, 1881) Campbell I.
 Auckland Is.
 ***Chaetocoelopa monstrosa* (Hutton, 1901) Auckland Is.
Coelopa curvipes Hutton, 1902 Auckland Is.
Coelopa debilis Lamb, 1909 Campbell I.
 ***Coelopella plebia* Malloch, 1933 Campbell I.
 Auckland Is.
 **Coelopella* sp. Auckland Is.
 **Icaridion nasutum* Lamb, 1909 Campbell I.

Family *Sciomyzidae*

- Polytocus spinicosta* Lamb, 1909 Auckland Is.
 **Xenosciomyza turbotti* sp. nov. Auckland Is.

Family *Sapromyzidae*

- ***Pocillohetaerella bilineata* (Hutton, 1901) Campbell I.
 Auckland Is.

Family *Lonchaeidae*

- Lonchaea aucklandica* Hutton, 1902 Auckland Is.

Family *Agromyzidae*

- Agromyza australiensis* Mik, 1881 Auckland Is.

Family *Ephydriidae*

- Hydrellia enderbii* (Hutton, 1902) Auckland Is.
 ***Scatella nelsoni* Tonnoir & Malloch, 1926 Campbell I.

Family *Canaceidae*

- Macrocanace australis* (Hutton, 1902) Campbell I.

Family *Borboridae* (*Sphaeroceridae*)

- **One species Campbell I.

Family *Milichiidae*

- ***Australimyza anisotomae* Harrison, 1953 Campbell I.

Family *Calliphoridae*

- Calliphora huttoni* Hutton, 1902 Auckland Is.
Calliphora hortona (Walker, 1849) Auckland Is.
 **Calliphora icela* (Walker, 1849) Auckland Is.
Calliphora laenica (White, 1843) Campbell I.
 **Calliphora quadrimaculata* (Svederus, 1787) Auckland Is.
 **Calliphora viridiventris* (Malloch, 1930) Campbell I.

Family *Muscidae*

- Calliphoroides flavipes* (Lamb, 1909) Auckland Is.
Coenosia filipennis Lamb, 1909 Campbell I.
Coenosia fumipennis Lamb, 1909 Campbell I.
Fannia canicularis (Linnaeus, 1761) Auckland Is.
Limnophora aucklandica Hutton, 1902 Auckland Is.
 **Limnophora brunneinota* sp. nov. Campbell I.
 **Limnophora brunneivittata* sp. nov. Campbell I.
Limnophora curvipes (Lamb, 1909) Auckland Is.
Limnophora lasiophthalma Lamb, 1909 Auckland Is.
Limnophora melas (Schiner, 1868) Auckland Is.
 **Limnophora minuta* sp. nov. Campbell I.
 **Limnophora sorenseni* sp. nov. Campbell I.
 **Limnophora villosus* (Hutton, 1902) Auckland Is.
 **Limnophora* sp. Campbell I.
Melanocheilia insularis (Lamb, 1909) Campbell I.
Muscina stabulans (Fallen, 1823) Auckland Is.
 **Paralimnophora antipoda* sp. nov. Campbell I.
Paralimnophora depressa Lamb, 1909 Auckland Is.
 **Paralimnophora indistincta* Lamb, 1909 Auckland Is.

Family *Tachinidae*

- Erythronychia australiensis* (Schiner, 1868) Auckland Is.
Protohystricia signata (Walker, 1849) Auckland Is.

Family *Hippoboscidae*

- ***Melophagus ovinus* (Linnaeus, 1761) Campbell I.
 **Ornithoica* sp. Auckland Is.

NOTES AND DESCRIPTIONS OF SPECIES

The location of type specimens of new species described in this paper are indicated in the text. Other specimens have been distributed among the following institutions: Plant Diseases Division, Department of Scientific and Industrial Research, Auckland; Auckland Museum; Dominion Museum, Wellington; Canterbury Museum, Christchurch; Cawthron Institute, Nelson.

Family *Anisopodidae*Genus *Anisopus* Meigen

Anisopus Meigen, 1803 *Mag. f. Insektenk.* (Illiger), 2: 264.

1. *Anisopus notatus* (Hutton)

Rhyphus notatus Hutton, 1902. *Trans. N.Z. Inst.* 34: 191.

Anisopus notatus (Hutton). Edwards, 1923. *Trans. N.Z. Inst.*

54: 270. 1923. *Ann. Mag. Nat. Hist.* (9), 12: 483.

Rhyphus undulatus Lamb, 1909. *Subant. Isl. N.Z.* 1: 131.

Anisopus undulatus (Lamb). Edwards, 1923. *Ann. Mag. Nat. Hist.* (9), 12: 483.

Specimens: Auckland Is.: Musgrave Pen., on windows of huts, 23/12/1943, 1 ex. (*W. H. Dawson*); Port Ross, Ranui Cove, 1943, 5 ex. (*R. A. Falla*); Musgrave Pen., 30/5/1943, 3 ex. ("*Cape Expedition*").

Alexander (this bulletin p. ??) noted *A. undulatus*.

2. *Anisopus neozelandicus* (Schiner)

Rhyphus neozelandicus Schiner, 1863. *Reise Novara Diptera*, p. 49.

Anisopus neozelandicus (Schiner). Edwards, 1923. *Trans. N.Z. Inst.* 54: 269.

Specimens: Auckland Is.: Port Ross, Ranui Cove, 1943, 4 ex. (*R. A. Falla*); Musgrave Pen., 30/5/1943, 3 ex. ("*Cape Expedition*").

Family *Psychodidae*Genus *Psychoda* Latreille

Psychoda Latreille, 1796. *Préc. Car. Ins.*, p. 152.

3. *Psychoda acutipennis* Tonnoir

Psychoda acutipennis Tonnoir, 1920. *Ann. Soc. ent. Belg.* 60: 149.

Satchell, 1950. *Proc. R. ent. Soc. Lond. B* 19: 42-6. Harrison, 1953. *Trans. Roy. Soc. N.Z.* 81: 272.

Specimens: Campbell I.: Courrejolles Point, under stones in Mollyhawk Colony, 8/1/1947, 6 ex. (*J. H. Sorensen*).

This species has previously been reported from similar situations in Bounty and Antipodes Islands.

4. *Psychoda pulchrima* Satchell

Psychoda pulchrima Satchell, 1954. *Trans. R. ent. Soc. Lond.*, 105: 485-7.

Specimens: Campbell I.: 1943, 19 ex. Perseverance Harbour, ex clump of *Colobanthus muscoides* (Berlese Funnel), 17/7/1947, 1 ex. (*J. H. Sorensen*).

Auckland Is.: Musgrave Pen., 30/5/1943, 6 ex. ("*Cape Expedition*").

These are new locality records, as this species has hitherto been taken only from localities in East Otago. Like *P. acutipennis* it may prove to have a widespread distribution in the Subantarctic Islands.

Family *Culicidae*

Genus *Culex* Linnaeus

Culex Linnaeus, 1758. *Syst. Nat.* ed. 10, p. 602.

5. *Culex* sp.

Specimens: Auckland Is.: Port Ross, Ranui Cove, 13/11/1943, 1 ex. ("*Cape Expedition*"); Tucker Point, ex brackish rock pools, 18/1/1943, 5 larvae, 1 pupa (*W. H. Dawbin*).

Specimens are in a poor state of preservation and as a result cannot be identified. From a study of characters which are not destroyed it appears that these specimens do not agree with any species found in New Zealand and are probably undescribed.

Family *Chironomidae*

6. **Undetermined species** (A)

Specimens: Campbell I.: Venus Bay, from debris at high tide mark, 6/8/1947, 1 ex. (*J. H. Sorensen*).

Being in a poor state of preservation this specimen cannot be identified. However, as it clearly is a Chironomid it is recorded because it is the first specimen of a member of this family taken from Campbell Island.

Family *Mycetophilidae*

Genus *Anomalomyia* Hutton

Anomala Marshall, 1896. *Trans. N.Z. Inst.* 28: 293.

Anomalomyia Hutton, 1904. *Index Faunae Nov. Zeal.*, p. 134.
(*Nom. nov. pro. Anomala* Marshall *nec. auct.*)

7. *Anomalomyia guttata* (Hutton)

Mycetophila guttata Hutton, 1881. *Cat. N.Z. Dipt.*, p. 11.

Anomala guttata (Hutton). Marshall, 1896. *Trans. N.Z. Inst.* 28: 294

Specimens: Auckland Is.: Ranui Cove, "Lookout", 12/1/1943, 1 ♂ (*R. A. Falla*); Port Ross, Lookout Hut, 300', 6/2/1943, 2 ♀ (*R. W. Balham*).

Found previously only on the mainland of New Zealand.

Genus *Exechia* Winnertz

Exechia Winnertz, 1863. *Verh. z.-b. Ges. Wien.* 13: abh., 879.

8. *Exechia hiemalis* (Marshall)

Brachydicrania hiemalis Marshall, 1896. *Trans. N.Z. Inst.* 28: 300.

Exechia hiemalis (Marshall). Edwards, 1909. *Genera Insectorum*, Fasc. 93: 107. Tonnoir and Edwards, 1922. *Trans. N.Z. Inst.* 57: 836.

Specimens: Campbell I.: 1943, 41 ex. St. Col. Ridge, 700', from Berlese funnel material; 25/7/1947, 1 ex. (*J. H. Sorensen*).

Previously known only from material collected on the New Zealand mainland. This is one of the commonest species in the collection.

Genus *Mycetophila* Meigen

Mycetophila Meigen, 1803. *Mag. f. Insektenk. (Illiger) 2*: 263.

9. *Mycetophila marginepunctata* Tonnoir

Mycetophila marginepunctata Tonnoir, 1927. *Trans. N.Z. Inst. 57*: 847.

Specimens: Auckland Is.: Rauui Cove, —/3/1944, 1 ex. (*E. G. Turbott*).

Though not previously found on any of the Subantarctic Islands, the species is well known in New Zealand.

Genus *Zygomia* Winnertz

Zygomia Winnertz, 1863. *Verh. z.-b. Ges. Wien, 13*: abh., 901.

10. *Zygomia submarginata* sp.nov.

Male and Female.

General: A ferruginous species with light yellowish-brown legs and lightly patterned wings. Body length about 3.0 mm.; wing length about 3.0 mm.

Head: Antennae light brown, with 16 segments; proximal segment of scape small, conical; distal segment as wide as long; basal segment of flagellum at least three times as long as broad; remaining segments at least twice as long as broad except apical segment which is nearly three times as long as broad; all segments with short thick pile. (Fig. 2.) Front reddish-brown with narrow slightly darkened longitudinal ridge. Eyes blackish-brown with a covering of fine short hairs. Palpi light yellowish-brown.

Thorax: Reddish-brown. Anterior and lateral margins of mesonotum with row of bristles, one pair of strong dorocentrals; strong postalars; two pairs strong marginal scutellars; mesopleural and hypopleural bristles present.

Legs light yellowish-brown, slightly darker about trochanters and at apex of posterior femora. Anterior coxa with bristles on anterior margin; anterior tibia with apical spur; middle tibia with four dorsal, three anterior, two or three ventral and three posterior bristles, two of these posterior bristles small and close to the one large bristle; three strong and one weak apical spurs; posterior tibia with four dorsal, six anterior, an apical postero-dorsal fringe of hairs in comb-like formation, two strong and other small apical spurs; ventral margin of segments of posterior tarsus with small bristles, more distinct on basal segments.

Wings shaded, veins light brown. Distal half of wing shaded light brown, darker anteriorly with clear central area bounded by R_5 and M_{3+4} ; a dark area extending from costa about halfway along anterior margin of wing posteriorly through r-m to base of the two forks of M; veins in this area particularly fork of M distinctly darker than else-

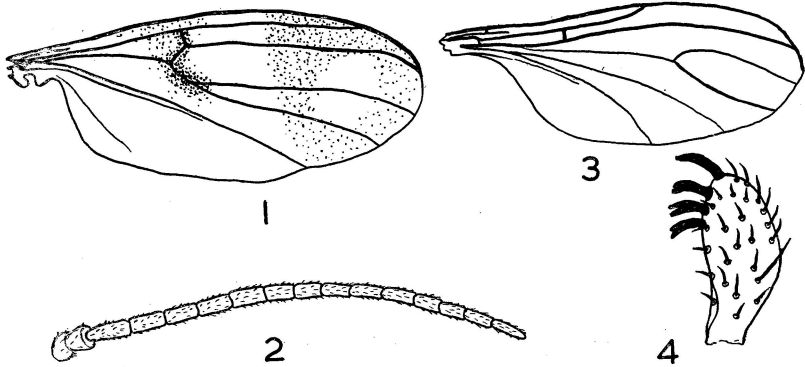


FIG. 1.—Wing of *Zygomia submarginata* sp. nov. $\times 18$.

FIG. 2.—Antenna of *Z. submarginata* sp. nov. $\times 35$.

FIG. 3.—Wing of *Sciara rubra* sp. nov. $\times 18$.

FIG. 4.—Clasper of *S. rubra* sp. nov. $\times 110$.

where. Sc short. Costa extending to apex of R_5 . (Fig. 1.) Halteres completely light yellow.

Abdomen: Reddish-brown.

Holotype: Campbell I.: 1943, ♀ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratypes: Campbell I.: 1943, 4 ♀ (*J. H. Sorensen*) (Auckland, Dominion, Canterbury Museums and Cawthron Institute).

Related to *Z. marginata* Tonnoir, 1927, but differs from it chiefly by the following character: flagellar segments of antennae of *Z. submarginata* are at least twice as long as broad, whereas those of *Z. marginata* are only slightly longer than broad.

Genus *Sciara* Meigen

Sciara Meigen, 1803. *Mag. f. Insektenk. (Illiger)* 2: 263.

11. *Sciara annulata* Meigen

Sciara annulata Meigen, 1818. *Syst. Besch. Zweifl. Insekt.* 1: 281.

Specimen: Campbell I.: 1943, 1 ♀ (*J. H. Sorensen*). Not found before on Campbell Island.

12. *Sciara rubra* sp. nov.

Male and Female.

General: A brown to reddish-brown species; legs brown; wings clear. Body length about 2.5 mm.; wing length about 2.5 mm.

Head: Antennae with 16 segments; proximal segment of scape bulbous, slightly longer than wide; distal segment of scape wider than proximal, globular and as wide as long; all segments of flagellum about 2.5 times as long as wide. Eyes black in preserved specimens, bare. Ocelli above eye bridge on raised portion of front. Proboscis and palpi yellowish-brown.

Thorax: Brown or reddish-brown. Post-alars strong; pair of strong posterior dorsocentrals; mesonotum with some scattered hairs; thoracic pleura without bristles.

Legs brown. Fore tibia with single apical spur, mid and hind tibiae each with pair of apical spurs; hind tibia lacking a comb.

Wings clear. Posterior veins weak; branches of M and Cu bare; costa extending to two-thirds distance between R_5 and M_1 ; fork of M distal to apex of R_1 ; branches of M (M_{1+2}) nearly parallel. (Fig. 3.)

Halteres yellowish-brown; stalk paler brown.

Abdomen: Brown or reddish-brown. External male genitalia have the following characters: claspers with short hairs on outer surface; concave inner surface bounded laterally by about three strong hairs on each side; apex in form of a stout spine. (Fig. 4.)

Holotype: Campbell I.: 1943, ♂ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratypes: Campbell I.: 1943, 2 ♂, 2 ♀ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research, Auckland, Dominion and Canterbury Museums).

Differentiated generally from the other species of *Sciara* by the shape and armature of the clasper and especially from *S. philpotti* Tonnoir, 1927 and *S. harrisi* Edwards, 1927 by the lighter body colour.

Family *Simuliidae*

Genus *Austrosimulium* Tonnoir

Austrosimulium Tonnoir, 1925. *Bull. Ent. Res.*, 15: 230.

13. *Austrosimulium vexans* (Mik)

Simulium vexans Mik, 1881. *Verh. z.-b. Ges. Wien.*, 31: abh, 201.

Austrosimulium vexans (Mik). Tonnoir, 1925. *Bull. Ent. Res.*, 15: 250.

Specimens: Campbell Is.: 1943, 16 ex. (*J. H. Sorensen*). Auckland Is.: 1943, 1 ex.; 30/5/1943, 3 ex. ("*Cape Expedition*").

14. *Austrosimulium australense* (Schiner)

Simulia australense Schiner, 1868. *Reise Novara. Zool.*, 2: 15.

Austrosimulium australense (Schiner). Tonnoir, 1925. *Bull. Ent. Res.*, 15: 232 and 251.

Not represented in the collection. Miller (1950, p. 145) considered that the presence of this species in Auckland Islands is doubtful.

Families: *Stratiomyidae*, *Therevidae*, *Asilidae*, and *Empididae*

None of the species belonging to these four families, listed on pp. 207 and 208 is represented in the collection.

Family *Syrphidae*

Genus *Helophilus* Meigen

Helophilus Meigen, 1822. *Syst. Besch. Zweifl. Ins.*, 3: 368.

15. *Helophilus antipodus* Schiner

Helophilus antipodus Schiner, 1868. *Reise Novara Dipt.*: p. 359.

Miller, 1921. *Trans. N.Z. Inst.*, 53: 323.

Helophilus interuptus Lamb, 1909. *Subant. Isl. N.Z.*, 1: 133.

Specimens: Campbell I.: 1941, 2 ex. (*R. F. Wilson*); 1947, 3 ex. (*J. H. Sorensen*).

Auckland Is.: Musgrave Pen., flying in clearings 1/12/1943, 4 ex. (*W. H. Dawbin*).

16. *Helophilus campbellicus* Hutton

Helophilus campbellicus Hutton, 1902. *Trans. N.Z. Inst.*, 34: 170.

Miller, 1921. *Trans. N.Z. Inst.*, 53: 330.

Specimens: Campbell I.: 1941, 1 ex. (*R. F. Wilson*); 1947, 1 ex. (*J. H. Sorensen*).

Auckland Is.: Musgrave Pen., flying in clearings, 1/12/1943, 1 ex. (*W. H. Dawbin*).

17. *Helophilus hochstetteri* Nowicki

Helophilus hochstetteri Nowicki, 1875. *Mem. Krakauer Akad.*

Wissen., 2: 23. Miller, 1921. *Trans. N.Z. Inst.*, 53: 329.

No specimens of this species are in this collection.

18. *Syrphus novae-zealandiae* Macquart

Syrphus novae-zealandiae Macquart, 1885. *Dipt. Exot. suppl.*, 5:

115. Lamb, 1909. *Subant. Isl. N.Z.*, 1: 125. Miller, 1921.

Trans. N.Z. Inst., 21: 303.

Specimens: Campbell I.: 1947, 1 ex. (*J. H. Sorensen*).

Widespread in the New Zealand sub-region and found on the mainland, Chatham, Kermadecs, Auckland, and Campbell Islands.

Family *Helomyzidae*

Genus *Heloclusia* Malloch

Heloclusia Malloch, 1933. *Dipt. Pat. and Chili VI*, 4: 184.

19. *Heloclusia antipoda* sp. nov.

Male and Female.

General: A black fly with yellowish-brown face and cheeks and yellowish-brown areas on legs. Body length about 2.5 mm.; wing length about 2.5 mm.

Head: (Figs. 8 and 9). Arista minutely pubescent, hairs not longer than width of basal segment, blackish-brown. Antennae yellowish-brown; third segment dusted with black and darker apically; second segment with one strong dorsal bristle, ventral bristles and circle of smaller bristles on apical margin; first segment dark brown. Front shining black dorsally, merging to brown anteriorly; over one-half width of head at vertex; ocellar area slightly raised; ocelli dark brown; orbits raised above level of front and dusted. Two strong ocellar bristles; post-verticals strong and cruciate; verticals strong; three fronto-orbitals, the posterior bristle the strongest, the anterior the weakest, all reclinate; interorbital area with small scattered hairs. Face with membranous triangular area from epistome to beneath and between bases of antennae; lateral areas shining and heavily chitinized. Strong vibrissa present and a strong second oral bristle about one-third along cheek margin; about two strong bristles at lower posterior angle of cheek. Occiput black. Eyes dark red, bare. Vertical diameter of eye about three times width of cheek in same axis. Cheeks yellowish-

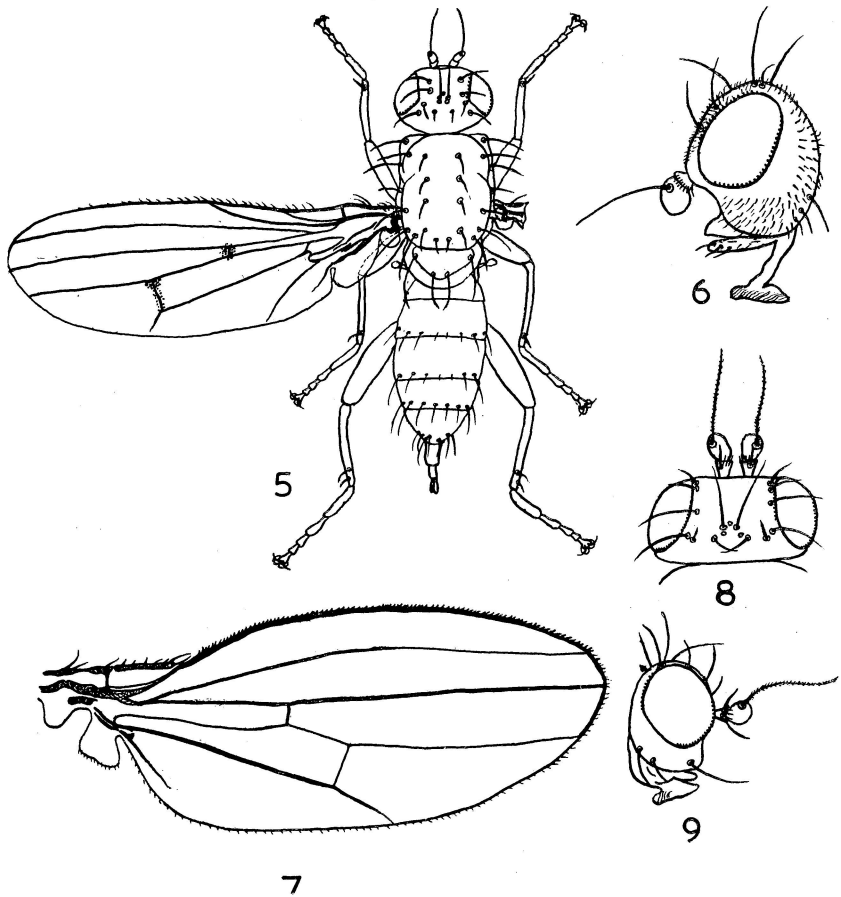


FIG. 5.—*Xenosciomyza turbotti* sp. nov. $\times 7$.
 FIG. 6.—Head of *X. turbotti* sp. nov. $\times 14$.
 FIG. 7.—Wing of *Heloclusia antipoda* sp. nov. $\times 30$.
 FIG. 8.—Head (dorsal) of *H. antipoda* sp. nov. $\times 30$.
 FIG. 9.—Head (profile) of *H. antipoda* sp. nov. $\times 30$.

brown merging into the black occiput at about middle of hind margin of eye. Proboscis yellowish-brown; palpi blackish-brown for apical two-thirds and about three bristles on apical half.

Thorax: Shining black but with dusting. One or two strong median presutural acrostichals; four dorsocentrals, one presutural; four scutellars, apical pair about 1.5 times length of basal pair; one strong humeral; one strong presutural; two notopleurals; one inter-alar; one supra-alar; two post-alars; one posterior sternopleural.

Legs black; coxae and trochanters, base and apex of femora and base of tibiae brown to yellowish-brown; tibiae, tarsi of middle and hind legs brown. Anterior tibia with two weak preapicals; middle tibia with short apicals; posterior tibia with small apicals.

Wings clear, veins brown; costa much weakened near humeral cross-vein and broken at apex of auxiliary vein; pair of strong costal bristles

almost at wing base and another pair at the distal break; heavy bristles of costa extending to apex of second vein; costa extending to apex of fourth vein; auxiliary vein entire but close to first vein at its apex; second basal and discal cells without separating cross-vein; anal vein ending rather abruptly about one-third distance from wing margin. (Fig. 7.)

Halteres elongate, brown.

Abdomen: Black, sparsely haired and with faint greyish-black dusting.

Holotype: Antipodes I.: Ringdove Bay, on plateau, 8/11/1950. ♀ (R. K. Dell) (Dominion Museum, New Zealand).

Paratype: Campbell I.: 1943 ♀ (J. H. Sorensen) (Plant Diseases Division, Department of Scientific and Industrial Research).

Three damaged specimens in the collection are considered to belong to this species.

Specimens: Campbell I.: 1943, 1 ex. (J. H. Sorensen).

Auckland Is.: Port Ross, Lookout Hut, 300', 6/11/1943, 1 ex. (R. W. Balham); Musgrave Pen., 1/12/1943, 1 ex. (W. H. Dawbin).

Malloch (1933) erected the genus *Heloclusia* for a South American species, *H. imperfecta* Mall., and it has remained a monotypic genus until now. Although the genus is placed in the Helomyzidae and would without doubt seem to belong there, it does show some characters typical of other families. Thus the membraneous triangular area of the face is a character normally found in the Clusiidae and lack of a separating cross-vein between the second basal and discal cells is a usual characteristic of the Drosophilidae. This latter character is used as the one which most readily distinguishes *Heloclusia* from other genera of the Helomyzidae.

H. antipoda is separated from *H. imperfecta* Mall. by its small size and dark coloration.

Family *Phycodromiidae*

Genus *Baeopterus* Lamb

Baeopterus Lamb, 1909. *Subant. Isl. N.Z. 1*: 141.

20. *Baeopterus robustus* Lamb

Baeopterus robustus Lamb, 1909. *Subant. Isl. N.Z. 1*: 142.

No specimens of this sub-apterous species are in the collection.

Genus *Chaetocoelopa* Malloch

Chaetocoelopa Malloch, 1933. *Ann. Mag. Nat. Hist. (10) 11*: 350.

21. *Chaetocoelopa littoralis* (Hutton)

Coelopa littoralis Hutton, 1881. *Cat. Dipt. N.Z.*, p. 69.

Chaetocoelopa littoralis (Hutton). Malloch, 1933. *Ann. Mag. Nat. Hist.*, (10) 11: 350.

Specimens: Auckland Is.: Port Ross, Ranui Cove, 1943, 1 ex. (R. A. Falla).

22. *Chaetocoelopa monstruosa* (Hutton)

Coelopa monstruosa Hutton, 1901. *Trans. N.Z. Inst.*, 33: 80.

Chaetocoelopa monstruosa (Hutton). Malloch, 1933. *Ann. Mag. Nat. Hist.*, (10) 11: 350.

Specimens: Auckland Is.: Port Ross, Ranui Cove, —/2/1943, 3 ex. (*W. H. Dawbin*); 1943, 2 ex. (*R. A. Falla*).

A well-known species but not previously collected from the Subantarctic Islands.

Genus *Coelopa* Meigen

Coelopa Meigen, 1830. *Syst. Besch. zweifl.*, 6: 8.

23. *Coelopa curvipes* Hutton

Coelopa curvipes Hutton 1902. *Trans. N.Z. Inst.*, 34: 172.

No specimens of this species were collected.

24. *Coelopa debilis* Lamb

Coelopa debilis Lamb, 1909. *Subant. Isl. N.Z.*, 1: 140.

No specimens of this species were collected.

Genus *Coelopella* Malloch

Coelopella Malloch, 1933. *Ann. Mag. Nat. Hist.*, (10) 11: 348.

25. *Coelopella plebia* Malloch

Coelopella plebia Malloch, 1933. *Ann. Mag. Nat. Hist.*, (10) 11: 348.

Specimens: Campbell I.: 1943, 2 ex. (*J. H. Sorensen*).

Auckland Is.: Musgrave Pen., 30/5/1943, 1 ex. ("*Cape Expedition*").

Previously known only from the mainland of New Zealand.

26. *Coelopella* sp.

Specimens: Auckland Is.: Carnley Harbour, 1 ex. (*Knowles and Pollock*); Musgrave Pen., 30/5/1943, 1 ex. ("*Cape Expedition*").

Both specimens appear to be closely allied to *C. plebia*. More specimens are necessary before its true systematic position can be determined.

Genus *Icaridion* Lamb

Icaridion Lamb 1909. *Subant. Isl. N.Z.*, 1: 140.

27. *Icaridion nasutum* Lamb

Icaridion nasutum Lamb, 1909. *Subant. Isl. N.Z.*, 1: 140.

Specimens: Campbell I.: Perseverance Harbour, Lookout Bay, among rocks at high tide mark, 16/11/1947, 1 ex. (*J. H. Sorensen*).

A subapterous species and only known from Campbell Island. There is no similarity between this species and *Maorimyia bipunctata* (Hutton), and Hendel (1937) did not synonymise them as Miller (1950, pp. 102 and 103) suggested.

Family *Sciomyzidae*

Genus *Polytocus* Lamb

Polytocus Lamb, 1909. *Subant. Isl. N.Z.*, 1: 144.

28. *Polytocus spinicosta* Lamb

Polytocus spinicosta Lamb, 1909. *Subant. Isl. N.Z.*, 1: 145.

No specimens of this large species is in the collection.

Genus *Xenosciomyza* Tonnoir and Malloch

Xenosciomyza Tonnoir and Malloch, 1928. *Rec. Cant. Mus.*, 3: 162.

29. *Xenosciomyza turbotti* sp. nov.

FEMALE

General: A light brown species; wings light brown; legs yellowish-brown. Body length about 8.0 mm., wing length about 8.0 mm. (Fig. 5.)

Head: (Fig. 6.) Arista brown, short pubescence only visible under high magnification. Antennae yellowish-brown; third segment with fine white pile; second segment elongated on inner margin, one strong bristle and black hairs over most of its surface; basal segment short with small apical black hairs. Front yellowish-brown; area at each side of ocellar triangle golden-brown; orbits greyish-brown and dusted. All frontal bristles equally strong; two fronto-orbitals reclinate and bending over eyes; distinct black hairs over front except for two areas lateral to ocellar triangle and about orbitals and verticals. Face light yellow, broadly carinate, epistome narrow but protruding. Cheeks with black hairs except near eye margin and at lower margin and two or three bristles at posterior lower angle. Occiput with many black hairs laterally and a clump of hairs dorsal to foramen. Eyes blackish-red in pinned specimens, bare. Vertical diameter of eye about four times width of cheek in same axis. Proboscis yellowish-brown; palpi light yellowish-brown with black bristles and hairs denser towards apex.

Thorax: Mesonotum greyish-brown with four longitudinal vittae, sometimes not distinct; one brown pair between dorsocentrals commencing at extreme anterior margin; lateral vitta of a dark brown presutural area outside dorsocentrals and a dark brown postsutural area lateral to dorsocentrals. Thoracic pleura brown to light brown. All thoracic bristles strong with the prescutellars sometimes distinctly weaker. Pair of prescutellars; one presutural and three postsutural dorsocentrals; four marginal scutellars; one humeral; one presutural; two notopleurals; one supra-alar; two post-alars; one posterior dorsal sternopleural; one propleural. Mesopleura with fine hairs dorsally and stronger hair posteriorly, bare elsewhere; pteropleura with clump of hairs below wing base; sternopleura with hairs over most of area; other thoracic pleura bare; hairs of mesonotum normally strong and distinct.

Legs light yellowish-brown, with covering of strong black hairs. Fore femora with strong bristles on postero-dorsal margin and on apical half of postero-ventral margin, one or two median posterior bristles; other femora usually without distinct bristles but occasionally they are distinguishable at apex; fore and mid tibiae with one strong preapical dorsal bristle; mid tibia also with several lateral and ventral apical spurs; hind tibia with one strong and one weak ventral apical bristle; apical postero-ventral region of tibiae and postero-ventral areas of tarsi, particularly of basal segments, with fine dense black hairs; claws and pulvilli large and distinct. Mid tarsi with short stout spines at apex of each posterior and anterior margin.

Wings generally shaded light brown. Veins light brown except dark brown anterior cross vein and brown posterior cross vein. Area sur-

rounding cross veins darkened. Costa with long black spines at regular intervals from before apex of subcosta to near apex of second vein, weakened towards this vein. Third costal section with heavy bristles extending over its basal third. Costa extending to fourth vein.

Halteres yellowish-brown.

Abdomen: Yellowish-brown with extensive brown areas over most of tergites. Weak bristles at middle of posterior margin of each tergite but strong bristles laterally. Tergites and sternites with covering of strong black hairs.

MALE

Similar to female except that body hairs are noticeably finer and longer than those of female. They are particularly longer on abdomen and legs and give the insect a distinct furry appearance.

Holotype: Auckland Is.: Carnley Harbour, Tagua Bay, Station, Oct., 1944, ♀ (*E. G. Turbott*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratypes: Auckland Is.: Carnley Harbour, Tagua Bay, Station, —/8/1944, 1 ♀; —/11/1944, 1 ♀; 4/11/1944, 1 ♀; Port Ross, Ranui Cove, —/3/1944, 1 ♀; —/8/1944, 1 ♂ (*E. G. Turbott*); 1942, 1 ♂ ("*Cape Expedition*"). (Plant Diseases Division, Department of Scientific and Industrial Research, Auckland; Dominion and Canterbury Museums; Cawthron Institute.)

Five additional somewhat damaged specimens in the collection are identified as this species.

Specimens: Auckland Is.: Musgrave Pen., Station, 1943, 2 ♀ (*C. Fleming*); 22/4/1943, 1 ♀ (*D. A. Paine*); Port Ross, Ranui Cove, —/11/1943, 2 ♀ (*W. H. Darwin*).

Named after E. G. Turbott, Ornithologist and Entomologist, Auckland Museum, who, as a member of the Cape Expedition, has given me much assistance in the study of this collection. Readily differentiated from *X. prima* Tonnoir and Malloch, 1928, the other species of the genus, by the presence of only one sternopleural. Although this character is sufficient to separate the two species they differ in such other characters as presence or absence of hairs on pteropleura and bristles of the femora.

Family *Sapromyzidae*

Genus *Poecilohetaerella* Tonnoir and Malloch

Poecilohetaerella Tonnoir and Malloch, 1926. *Rec. Cant. Mus.*, 3: 24.

30. *Poecilohetaerella bilineata* (Hutton, 1901)

Lauxania bilineata Hutton, 1901. *Trans. N.Z. Inst.*, 33: 88.

Poecilohetaerella bilineata (Hutton). Tonnoir and Malloch, 1926. *Rec. Cant. Mus.*, 3: 26.

Specimens: Campbell I.: 1947, 1 ex. (*J. H. Sorensen*).

Well known from New Zealand and previously taken from Auckland Islands, it is now recorded from Campbell Island.

Families *Lonchaeidae*, *Agromyzidae* and *Canaceidae*

None of the species belonging to these three families listed on pp. 208 and 209 is represented in the collection.

Family *Ephydriidae*Genus *Hydrellia* Robineau-Desvoidy

Hydrellia Robineau-Desvoidy, 1830. *Mem. pres. Ac. roy. Sci. Inst. France*, 2: 790.

31. *Hydrellia enderbii* (Hutton)

Drosophila enderbii Hutton, 1902. *Trans. N.Z. Inst.*, 34: 174.

Hydrellia enderbii (Hutton). Tonnoir and Malloch, 1926. *Rec. Cant. Mus.*, 3: 15.

Not represented in this collection.

Genus *Scatella* Robineau-Desvoidy

Scatella Robineau-Desvoidy 1830. *Mem. pres. Acad. roy. Sci. Inst. France*, 2: 801.

32. *Scatella nelsoni* Tonnoir and Malloch

Scatella nelsoni Tonnoir and Malloch, 1926. *Rec. Cant. Mus.*, 3: 11.

Specimens: Campbell I.: 1941, 1 ♂ (*R. F. Wilson*); Courrejolles Point, from Berlese funnel material, 13/9/1947, 2 ♂ (*J. H. Sorensen*).

Not previously collected from the Subantarctic Islands. The two specimens collected by the funnel were newly emerged and not fully expanded before fixation in preservative.

Family *Milichiidae*Genus *Australimyza* Harrison

Australimyza Harrison, 1953. *Trans. Roy. Soc. N.Z.*, 81: 227.

33. *Australimyza anisotomae* Harrison

Australimyza anisotomae Harrison 1953. *Trans. Roy. Soc. N.Z.*, 81: 227.

Specimens: Campbell I.: 1943, 8 ex., Shoal Point, on *Chrysobactron* flowers; 23/11/1947, 1 ex. (*J. H. Sorensen*).

Type locality is Antipodes Island. Specimens from Campbell Island are a new locality record.

Family *Calliphoridae*Genus *Calliphora* Robineau-Desvoidy

Calliphora Robineau-Desvoidy, 1830. *Mem. pres. Acad. roy. Sci. Inst. France*, 2: 433.

34. *Calliphora huttoni* Hutton

Calliphora eudypti Hutton, 1902. *Trans. N.Z. Inst.*, 34: 170.

Xenocalliphora eudypti (Hutton). Malloch, 1930. *Rec. Cant. Mus.*, 3: 318.

Calliphora huttoni nom. nov. pro *eudypti* Hutton Miller, 1950. *Cat. Dipt. N.Z. Subreg.*, p. 115. Bull. 100 Department of Scientific and Industrial Research, Wellington, 194 pp.

Malloch (1930) designated specimens from Snares Island as the types. Specimens were recorded by Hutton (1902) from Auckland Islands as well as the Snares Island and Campbell Island but the

specimens from the last locality are of a different species. No specimens are in the present collection.

35. *Calliphora hortona* (Walker)

Musca hortona Walker, 1849. *List. Dipt. Brit. Mus.*, 4: 894.

(Full synonymy see Miller 1950, p. 115.)

No specimen is in the present collection. The species is recorded from Auckland Is. as well as the main islands of New Zealand.

36. *Calliphora icela* (Walker)

Musca icela Walker, 1849. *List. Dipt. Brit. Mus.*, 4: 897.

Onesia icela Schiner, 1868. *Reise Novara, Dipt.*, p. 311.

Calliphora aureopunctata Macquart, 1854. *Dipt. exot., suppl.* 5: 130.

Calliphora icela (Walker). Hutton, 1881. *Cat. Dipt. N.Z.*, p. 60.

Specimens: Auckland Is.: Port Ross, 1942, 1 ex. ("Cape Expedition"); Musgrave Pen., in clearings, 1/12/1943, 1 ex. (W. H. Dawbin).

Common in New Zealand and only found in Auckland Islands of the Subantarctic Islands.

37. *Calliphora laemica* (White)

Musca laemica White, 1843. *Dieffenbach's "New Zealand"*, 2: 291.

Calliphora laemica (White). Hutton 1901. *Trans. N.Z. Inst.*, 33: 66.

No specimen is in the present collection.

38. *Calliphora quadrimaculatus* (Svederus)

Musca quadrimaculatus Svederus, 1787. *Stock. Nya. Handl.*, 8: 289.

(Full synonymy see Miller, 1950, p. 116.)

Specimens: Campbell I.: 1947, 4 ex. (J. H. Sorensen).

39. *Calliphora viridiventris* (Malloch)

Xenocalliphora viridiventris Malloch, 1930. *Rec. Cant. Mus.*, 3: 318

Calliphora viridiventris (Malloch). Miller, 1939. *Caveth. Inst. Mono.*, 2: 40.

Specimens: Campbell I.: 1947, 15 ex. (J. H. Sorensen).

40. *Calliphora* sp.

Specimens: Auckland Is.: Port Ross, 1942, 1 ex. ("Cape Expedition"); Musgrave Pen., in clearings, 1/12/1943, 2 ex. (W. H. Dawbin).

Because of the damaged state of the specimens it has not been possible to determine this species.

Family *Muscidae*

Genera: *Calliphoroides*, *Coenosia*, *Fannia*, *Melanochelia* and *Muscina*

None of these genera is represented in the present collection.

Genus *Limnophora* Robineau-Desvoidy

Limnophora Robineau-Desvoidy, 1830. *Mem. pres. Acad. roy. Sci. Inst. France*, 2: 517.

41. *Limnophora aucklandica* Hutton

Limnophora aucklandica Hutton, 1902. *Trans. N.Z. Inst.*, 34: 172.
Not represented in the present collection.

42. *Limnophora brunneinota* sp. nov.

FEMALE

General: A grey coloured species with the disc of mesonotum and scutellum distinctly brown. Body length 7.5 mm.; wing length 6.5 mm.

Head: Arista black, slightly pubescent on the basal thicker portion of apical segment. Antennae black with brownish-grey dusting; third segment less than twice as long as second; first segment much covered by front. Front brown with yellowish-brown dusting more pronounced at outer margin of orbits. Two dorsal fronto-orbitals directed outwards, anterior of the pair the stronger; about five strong anterior fronto-orbitals and smaller hairs directed inwards. Parafacials and face grey with yellowish-grey or brown dusting. Cheeks grey, some yellow dusting anteriorly. Vertical diameter of eye about twice width of cheek in same axis. Eyes with fine sparse white pile. Proboscis blackish-grey on heavily chitinized part of rostrum and theca, elsewhere light brown; palpi black, greyish-black apically.

Thorax: Grey; disc of mesonotum between interalars and including presuturals, brown; four narrow black vittae on this brown area; one pair between dorsocentrals, distinct anteriorly but fading and disappearing behind suture, the other pair commencing at presutural interalar and extending to about level with posterior interalar; scutellum brown; small triangular brown area with apex at supra-alar bristle and base at suture; dorsal portion of mesopleural and adjoining region of notopleura brown. No acrostichal bristles; five dorsocentrals; three postsutural; one presutural and three postsutural interalars; one supra-alar; two strong postalars; two strong and two weak scutellars on either side; two humerals; two notopleurals; two dorsal and several posterior mesopleurals; two sternopleurals.

Coxae and femora grey; tibiae light brown; tarsi light greyish-brown. Fore tibia with one median posterior bristle, one apical and one preapical; mid tibia with two antero-dorsals on apical third and two postero-dorsals on apical half, one strong preapical, one strong and several weaker apicals; hind tibia with two antero-ventrals on apical half, four antero-dorsals on apical two thirds, one preapical, about eight postero-dorsals on apical two thirds, the centre bristles the strongest, one preapical, one dorsal preapical and several smaller central apicals.

Wings light brown; costa yellowish-brown; other veins brown; cross veins darker brown and some darkening about them.

Squames light whitish-brown.

Halteres whitish-yellow, light brown basally.

Abdomen: Grey with faint brown areas on tergites; ovipositor brown.

Holotype: Campbell I.: 1941 ♀ (*R. F. Wilson*) (Plant Diseases Division, Department of Scientific and Industrial Research).

This species belongs to the *Spilogona* section of the genus *Limnophora*. All species of this group so far described from the New Zealand region have four postsutural dorsocentrals. *L. brunneinota*, having but three postsuturals, is at once differentiated from the previously known species. Together with *L. brunnevittata* and *L. sorenseni* it may prove to belong to a new subgeneric category with close affinities to the *Spilogona* section.

43. *Limnophora brunnevittata* sp. nov.

FEMALE

General: A bluish-grey fly with distinct brown vittae on thorax. Body length 6 mm.; wing length 6 mm.

Head: Arista black, slightly pubescent on basal half of terminal segment. Antennae black, with yellowish dusting in some lights; third segment less than twice as long as second; basal segment somewhat hidden beneath front. Front blackish-grey, grey median area from ocelli to anterior margin, grey orbits. Two dorsal fronto-orbitals directed outwards over eyes; about four strong anterior fronto-orbitals and small hairs directed inwards. Parafacials, face and cheeks grey, a dark reddish-brown spot at base of ptinial suture. Eyes with a few hairs. Vertical diameter of eye about twice width of cheek in same axis. Proboscis brown or blackish-brown with rostrum and theca grey dusted on black background; palpi black and not lighter at apex.

Thorax: Bluish-grey; three brown vittae on mesonotum, one between dorsocentrals and one outside each row of dorsocentrals; median vitta extending on to disc of scutellum; mesopleura brown dorsally and the suture posterior to it brown; a bluish-grey spot at its postero-dorsal corner. Bristles as in *L. brunneinota*.

Coxae and femora grey; tibia light brown; tarsi dark purplish-brown. Fore tibia with one strong posterior bristle at middle; mid tibia with one antero-dorsal beyond middle and two postero-dorsals about middle; hind tibia with three short antero-ventral bristles on apical half, about three strong antero-dorsals, one at each quarter, about eight postero-dorsals on apical three quarters, the central bristles the strongest, one strong dorsal preapical, weak ventral apicals.

Wings light brown; vein light brown basally, darker apically; cross veins brown with some shading on wing membrane about them.

Squames white.

Halteres light yellow.

Abdomen: Light bluish-grey with brown areas on tergites; ovipositor light purplish-yellow.

Holotype: Campbell I.: 1947, ♀ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Two damaged specimens are identified as this species.

Specimens: Campbell I.: 1942, 1 ex.; 30/9/1942, 1 ex. (*J. H. Sorensen*).

Closely related to *L. brunneinota* and separated from it by the distinctive brown vittae on the bluish-grey mesonotum.

44. *Limnophora curvipes* (Lamb)

Trichophticus curvipes Lamb, 1909. *Subant. Isl. N.Z.*, 1: 138.

Limnophora curvipes (Lamb). Séguy, 1937. *Gen. Insect. Fasc.*, 205, p. 261.

Unrepresented in the present collection and known only from Auckland Islands.

45. *Limnophora lasiophthalma* Lamb

Limnophora lasiophthalma Lamb, 1909. *Subant. Isl. N.Z.*, 1: 135.

Not in the collection. Auckland Islands are the only localities where this species is known to occur.

46. *Limnophora melas* (Schiner)

Aricia melas Schiner, 1868. *Reise Novara, Dipt.*, p. 302.

Limnophora melas (Schiner). Séguy, 1937. *Gen. Insect. Fasc.*, 205, p. 265.

Not represented in this collection.

47. *Limnophora minuta* sp. nov.

MALE AND FEMALE

General: A blackish-brown fly with unmarked wings, large antennae and narrow cheeks. Body length 4.0 mm.; wing length 3.5 mm.

Head: Arista dark gradually narrowing from basal segment to apex of terminal segment; finely pubescent on basal half. Antennae blackish-brown; third segment rectangular with rounded apex and four to five times length of second segment; second segment with one small bristle and some smaller hairs. Front less than one third width of head at vertex, blackish-brown. All frontal bristles stout and strong except postverticals which are weaker; two outwardly directed dorsal fronto-orbitals, the other fronto-orbitals directed inwards. Face grey dusted. Strong vibrissa present, other oral hairs distinctly shorter. Eyes very sparsely covered with minute fine hairs. Vertical diameter of eye five to six times width of cheek in same axis. Proboscis dark brown; palpi dark brown.

Thorax: Blackish-brown, darker on mesonotum and scutellum. Two strong and two weak marginal scutellars on either side, four small hair-like prescutellars; acrostichal hairs minute; two strong presutural and four strong postsutural dorsocentrals; two strong humerals; three sternopleurals, dorsal posterior bristle very strong, ventral and anterior bristles weak.

Legs brown.

Wings light brown with a slight darkening about the anterior cross vein; veins brown, anterior cross vein dark brown. Black costal spines extending to one fifth distance between second and third veins.

Halteres yellow apically, yellowish-brown basally.

Abdomen: Dark brown, almost black on apical segments especially in male.

Holotype: Campbell I.: 1943, ♂ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratype: Campbell I.: 1943, ♀ (*J. H. Sorensen*) (Dominion Museum, New Zealand).

Four postsutural dorsocentrals separate this species from other members of the genus recorded from the Campbell Island. It differs from

New Zealand members of the *Spilogona* group by the dark coloured front.

48. *Limnophora sorenseni* sp. nov.

MALE AND FEMALE

General: A grey-coloured fly with faint vittae. Wings light brown. Body length about 8.0 mm.; wing length about 7.0 mm.

Head: Arista black, very faintly pubescent towards base. Antennae black, heavily dusted giving a grey colour in some lights; third segment not twice length of second; second segment with one strong and two shorter dorsal bristles; first segment with one or two strong, distinctly proclinate dorsal hairs. Front one-third width of head at vertex; purplish-grey; orbits grey. Two dorsal fronto-orbitals directed outwards over eye, anterior the stronger; three or four strong anterior fronto-orbitals and smaller hairs all directed inwards over front. Para-facials and cheeks grey with faint golden dusting. Face grey, dusted with faint yellow dust. Eyes sparsely haired with short fine hairs. Vertical diameter of eye about twice width of cheek in same axis. Proboscis black, with grey dusted haustellum and brown lobes; palpi black with extreme tip brown in some specimens.

Thorax: Grey. Mesonotum with a wide faint brown vitta between dorsocentrals, margined anteriorly by narrow black bands and extends on to centre of scutellum; one narrow brown vitta lateral to dorsocentrals irregular and usually represented by a smudge in presutural region. A blackish-brown area extending from behind humerus across dorsal mesopleura and pteropleura to base of wing. No differentiated acrostichal bristles; five dorsocentrals, three postsutural; one presutural interalar, two strong and one weak postsutural interalar; one supraalar; two strong postalars; two strong and two weak bristles on either side of scutellum; scutellar disc haired; two humerals; one presutural; two notopleurals; two dorsal and several posterior mesopleurals; two strong dorsal sternopleurals, occasionally one much weaker bristle ventral to the posterior of the pair.

Legs with grey coxae, trochanters and femora; apex of femora and all tibiae yellowish-brown; tarsi light purplish-brown. Fore tibia with one posterior and sometimes one shorter dorsal bristle just beyond middle, strong dorsal preapical and ventral apical; middle tibia with three antero-dorsal bristles, one dorsal preapical, one to three postero-dorsal bristles on apical half and several ventral apical bristles; hind tibia with four antero-dorsal bristles on apical two-thirds, one preapical dorsal bristle, about 10 postero-dorsal bristles on apical threequarters, the centre ones the strongest, two strong antero-ventral bristles on apical half, large number of small ventral apicals.

Wings shaded with light brown, veins yellowish-brown, cross veins brown and area about these veins shaded brown.

Squames light yellow.

Halteres yellow with light orange tints basally.

Abdomen: Grey and unspotted except for a very faint longitudinal light brown mark on centre of fourth tergite.

Holotype: Campbell I.: 1945, ♂ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratypes: Campbell I.: 22/8/1942, 1 ♂; 30/8/1942, 1 ♂; 1942,

1 ♂, 1 ♀; 1947, 1 ♀ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research, Auckland, and Dominion Museums).

Named after J. H. Sorensen who obtained most of the Diptera in the collection.

Closely related to *L. brunneinota* and *L. brunneivittata* but differentiated from them by its larger size and the absence of distinct vittae or differentiated brown areas on mesonotum.

49. *Limnophora villosus* (Hutton)

Trichophyticus villosus Hutton, 1902. *Trans. N.Z. Inst.*, 34: 171.

Limnophora villosus (Hutton). Séguy, 1937. *Gen. Insect. Fasc.*, 205, p. 274.

Not in the collection.

50. *Limnophora* sp.

Specimens: Campbell I.: 1945, 2 ex.; 25/8/1942, 1 ex.; 31/8/1942, 1 ex. (*J. H. Sorensen*).

Auckland Is.: Musgrave Pen., 22/4/1943, 1 ex. (*D. A. Paine*).

Because of the damaged state of these specimens they cannot be identified beyond the genus. They appear to be distinct from any of the species noted above.

Genus *Paralimnophora* Lamb

Paralimnophora Lamb, 1909. *Subant. Isl. N.Z.*, 1: 136.

This genus is closely related to *Limnophora* R-D but is readily distinguished by the larger cheeks and peristome, the round eyes and yellow palpi.

One new species is described below and a key for the separation of all known species is given.

Key to species of *Paralimnophora* Lamb

- | | | | |
|---|-------|-------|--------------------------|
| 1. General body colour light grey | | | 2 |
| — General body colour dark brown | | | <i>antipoda</i> sp. nov. |
| 2. Abdominal tergites with distinct brown areas | | | <i>depressa</i> Lamb |
| — Abdominal tergites without distinct brown areas | | | <i>indistincta</i> Lamb |

51. *Paralimnophora antipoda* sp. nov.

MALE AND FEMALE

General: A black fly with dark brown vittae and heavily dusted. Wings unmarked. Bristles normal. Body length 3.5 to 4.5 mm.; wing length 3.0 to 4.5 mm.

Head: Arista brownish-black, black basal segments, minutely pubescent. Antennae black with grey dusting; row of black bristles on second segment. Front blackish-brown; orbits blackish-grey; ocellar area blackish-grey. Ocellars strong; post-verticals weak; inner vertical strong and about one and a third times length of outer vertical; two small dorsal fronto-orbitals directed outwards over eye, remaining fronto-orbitals stronger and directed inwards. Face black, heavily

dusted with grey. Strong vibrissa present and other marginal bristles posterior to it and at lower angle of cheek. Occiput black. Eyes dull blackish-red in preserved specimens, with few short very fine hairs. Vertical diameter of eye about twice width of cheek in same axis. Cheeks brownish-black, lighter brown ventrally. Proboscis shining blackish-brown; palpi yellowish-brown with fine brown hairs.

Thorax: Heavily dusted; mainly black but with fine dark brown longitudinal vittae on mesonotum, one along acrostichal row of hairs, one along each dorsocentral row and one lateral to dorsocentrals commencing at presutural bristle and extending posteriorly through interalar bristles; scutellar disc dark brown. Pair of weak prescutellars; two presutural and four postsutural dorsocentrals; four strong marginal scutellars; one presutural and three postsutural interalars, the posterior one weak; two humerals, ventral bristle the stronger; one strong presutural; two notopleurals; two supraalars posterior very weak; two postalars; two small propleurals; row of posterior mesopleurals; one strong posterior sternopleural.

Legs dark purplish-black; apex of femora, all tibia and tarsi yellowish-brown except two apical segments of tarsi which are light purplish-black.

Wings light brown, without darkened areas; veins brown. Black spines of costa extending one-third to two-fifths distance between second and third veins.

Squames white or yellowish-white with light yellow pile.

Halteres yellow at apex, light brown basally.

Abdomen: Purplish-black with brown areas on tergites of 2nd, 3rd, and 4th segments.

Holotype: Campbell I.: 1947, ♀ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research).

Paratypes: Campbell I.: 1947, 1 ♀; 1943, 4 ♀, 3 ♂ (*J. H. Sorensen*) (Plant Diseases Division, Department of Scientific and Industrial Research, Auckland; Dominion and Canterbury Museums, and Cawthron Institute).

One damaged specimen is identified as this species.

Specimen: Campbell I.: 1947, 1 ♀ (*J. H. Sorensen*).

Readily distinguished from the other two species of the genus by its smaller size, darker colours and generally finer bristles and hairs.

52. *Paralimnophora depressa* Lamb

Paralimnophora depressa Lamb, 1909: *Subant. Isl. N.Z.*, 1: 136.

Specimens: Campbell I.: 1 ♂, 1 ♀ (*Anon.*).

These specimens are in the collection of the Otago Museum and were not collected by the recent expeditions. This is the first record of the species from Campbell Island although there is some doubt about the localities given by Lamb (1909) in the original description. In the introduction to the description of the genus Lamb (loc. cit.) reports specimens from Enderby Island (Auckland Islands) and Campbell Island while in the description of species he records Enderby and Antipodes Island.

53. *Paralimnophora indistincta* Lamb

Paralimnophora indistincta Lamb, 1909. *Subant. Isl. N.Z.*, 1: 137.

MALE AND FEMALE

General: A grey species with clear wings and strong stout hairs and bristles. Body length 4.0 mm.; wing length 4.5 mm.

Head: Arista black, finely pubescent. Antennae black; third segment not twice length of second; second segment with two dorsal bristles. Front brown with golden grey dusting; orbits grey. Two dorsal outwardly directed fronto-orbitals and about four anterior inwardly directed ones. Face, parafacials, cheeks, and occiput grey with slight yellow dusting seen in some lights. Eyes sparsely haired. Vertical diameter of eye twice width of cheek in same axis. Proboscis mainly dark brown; palpi yellow.

Thorax: Grey. Mesonotum with brown longitudinal vittae; one median one along row of acrostichal hairs, lateral ones along row of dorsocentral and row of interalar, the latter vitta not complete. Brown area on mesopleura. Scutellum grey with brown spot at each basal bristle. One pair of prescutellar acrostichals; four postsutural and two presutural dorsocentrals; pair of basal and apical scutellars; two postsutural and one presutural interalars; two humerals; one presutural; two notopleurals; two supraalars, anterior one the stronger; three postalars, posterior one on interalar row weakest; two dorsal and about four posterior mesopleurals; two strong sternopleurals and one weaker posterior ventral bristle.

Legs grey; tibiae and tarsi yellowish-brown with some faint greyish dusting. Fore tibia with one posterior median bristle, strong apical and preapical; mid tibia with one antero-dorsal bristle at apical third and two postero-dorsals on apical half, several apicals and preapicals; hind tibia with one or two antero-ventral bristles at about apical third and two antero-dorsals at about middle, no postero-dorsals, strong preapical and some apicals.

Wings clear and only slightly tinged with brown; veins light brown, darker apically; no darkening about cross veins.

Squames light or whitish-yellow.

Halteres light orange.

Abdomen: Grey with minute dark grey spots at bases of most hairs and bristles. No brown areas.

Specimens: Auckland Is.: Pigeon Bay (Haskell Bay), —/11/1943, 1 ♀ (*R. A. Falla*); Musgrave Pen., 22/4/1943, 2 ex. (*D. A. Paine*).

Family *Tachinidae*

Not in the collection.

Family *Hippoboscidae*Genus *Melophagus* Latreille

Melophagus Latreille, 1802. *Hist. nat. Crust. Inst.*, 3: 466.

54. *Melophagus ovinus* (Linnaeus)

Hippobosca ovinus Linnaeus, 1761. *Fauna Suec.*, p. 472.

Melophagus ovinus (Linnaeus). Latreille, 1802. *Hist. nat. Crust. Ins.*, 3: 466.

Specimens: Campbell I.: From sheep, 3/7/1947, 1 ex. (*R. L. Oliver*).

Not previously been taken from Campbell Island. Sheep were introduced to the island in the 19th century.

Genus *Ornithoica* Rondani

Ornithoica Rondani, 1878. *Ann. Mus. Stor. nat. Genova.*, 12: 159.

55. *Ornithoica* sp.

Specimens: Auckland Is.: —/11/1943, 1 ex. ("Cape Expedition");

DISCUSSION

The study of this collection of Diptera has brought to light some interesting data. The most important are the large number of new locality records.

For the first time the Culicidae, Helomyzidae, Borboridae, and Hippoboscidae are recorded from the Subantarctic Islands of New Zealand. One of the Hippoboscidae, the sheep ked, is obviously a recent introduction but the *Ornithoica* species is probably indigenous and undoubtedly a bird parasite. The family Mycetophilidae is now known to be represented in the islands by six species. Previously this family was known in the subantarctic islands only by the occurrence of the genus *Sciara* in Antipodes and Macquarie Islands. An extension of the range of some species is recorded. The most noteworthy of these are:

Australimyza anisotomae, which was originally recorded from the Antipodes Island and is now collected from Campbell Island;

Psychoda acutipennis a semiapterous species is for the first time recorded from Campbell Island.

Several species known from the mainland of New Zealand are now recorded for the first time from the Islands. These include four Mycetophilids, two Phycodromiids, one Ephydrid, and one Psychodid.

Good series of specimens are now available for some species previously known from one or a few specimens. This is particularly so with *Austrosimulium vexans* and *Calliphora viridiventris*.

The affinities of the Diptera fauna of Auckland and Campbell Islands have been discussed elsewhere (Harrison, 1953) and it is sufficient to state here that it is best regarded as a peripheral fauna of the New Zealand subregion. No obvious similarity exists with the Australian fauna and any similarity with the South American fauna is no more marked than that of the Diptera fauna of New Zealand itself.

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REFERENCES

(Includes all papers which give original descriptions of species first described from the islands and papers containing first references to records of the occurrence of species on the islands.)

- EDWARDS, F. W., 1923: Notes on the Dipterous family Anisopodidae. *Ann. Mag. Nat. Hist.*, (9) 12: 475-493.
- , 1924: New species of crane-flies collected by Mr. G. V. Hudson in New Zealand. Part 2. *Ann. Mag. Nat. Hist.*, (9) 13: 159-163.
- FALLA, R. A., 1948: *New Zealand Geographer* 4 (2): 127-154.
- HARRISON, R. A., 1953: Diptera of the Sub-Antarctic Islands of New Zealand. *N.Z. Sci. Rev.*, 11: 78-80.
- HENDEL, F., 1937: Zur Kenntnis einiger subantarktischer Dipteren und ihrer Verwandten. *Ann. Nat. Hist. Mus. Wien.*, 48: 179-193.
- HUTTON, F. W., 1901: Synopsis of the Brachycera of New Zealand. *Trans. N.Z. Inst.*, 33: 1-95.
- , 1902: On a small collection of Diptera from the Southern Islands of New Zealand. *Ibid.*, 34: 169-175.
- , 1904: Description of a new blow-fly from Campbell Island. *Ibid.*, 36: 155.
- LAMB, C. G., 1909: The Diptera of the Subantarctic Islands of New Zealand. *Subant. Isl. N.Z.*, 1: 124-145.
- MALLOCH, J. R., 1930: The Calyptrate Diptera of New Zealand. Part III. *Rec. Cant. Mus.*, 3: 313-324.
- , 1933: *Diptera of Patagonia and South Chili. Part VI. Fasc. 4* Acalyptrata, pp. 177-391.
- MILLER, D., 1950: *Cat. Dipt. N.Z. Sub-region*. Bull. 100. D.S.I.R. Wellington, 194 pp.
- MIK, J. 1881: Diptera gesammelt von Hermann Krone auf den Aucklands-Inseln bei Gelegenheit der deutschen 1874 und 1875. *Verh. z.-b. Ges. Wien*, 31: 195-206.
- NOWICKI, M., 1875: Beitrag zur Kenntniss der Dipternfauna Neuseelands. *Mem. Krakauer Akad. Wissen.*, 2: 1-29.